

AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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AMERICAN RAILROAD JOURNAL, &c.

NEW-YORK, NOVEMBER 9, 1833.

MECHANICS' MAGAZINE.—The October number of this work is published. It contains a great variety of articles on various subjects; amongst others, a full account of the articles exhibited at the Fair at Masonic Hall, together with the able address of Mr. KENNEDY, delivered before the American Institute at Chatham street Chapel.

The "Observations on Railroads, and Hints to Railroad Companies," by a "Civil Engineer," which we copy from the London Morning Chronicle, will be found well worthy of consideration, as well in this country as in Great Britain, by all who are interested in the success of the system to which it relates. The proposition there laid down, that the interest of the companies will warrant the offer of large premiums for improvements in the locomotive engine, scarcely needs an argument with those who are aware of the expense of those engines. It is within the recollection of all who are at all familiar with the history of railroads for the last few years, that we are indebted to the Liverpool and Manchester Railroad Company's offer of £500 for the present degree of perfection to which locomotive power has been brought. If, then, the offer of a premium of £500 has done so much, what might we not anticipate if premiums of 5, 3, 2, and £1000 were offered for engines of the desired character, and powers, which can be kept in repair for one year, within a certain cost? By some, we doubt not, a prediction that locomotives will be constructed, within twenty years, to run

upon an average thirty miles the hour, would be laughed at, yet such a prediction, if made, will be more than verified.

INCREASED FACILITIES FOR TRAVELLING.

We learn that the Philadelphia and Trenton Railroad is completed from Trenton to Bristol, twelve miles, and that the section between Bristol and Philadelphia will be ready for use early in the spring. The New-Jersey Railroad, from Jersey City through Newark and Elizabethtown to New-Brunswick, is also progressing rapidly, and will, probably, be in use in the course of the ensuing summer. These roads when connected by a permanent track road, for which the timber is now landing at Trenton, as we are informed, which is to be laid on the turnpike between New-Brunswick and Trenton, to form the tracks, upon which locomotive engines or steam carriages may be used, will add another easy mode of travelling between the rival cities.

ADVANTAGES OF RAILROADS.—The communication between this city and Philadelphia has been greatly improved within a few years. By the Camden and Amboy Railroad, since locomotive engines were put on, it is no difficult matter to leave Philadelphia after breakfast, and dine in New-York at 3 P. M. On Thursday last the distance was performed in 6 hours 35 minutes. It will be no uncommon thing next year, for New-Yorkers to visit Philadelphia, and return the same day.

LOCOMOTIVE ENGINES.—The following account of the extraordinary performance of a locomotive engine is taken from the London Morning Post, furnished us by an intelligent gentleman, who takes great interest in the promotion of internal improvement. It shows conclusively, that we in this country are but just beginning to understand the importance of locomotive engines. Does it not show beyond a doubt that they are destined to effect as great improvement in our internal land communication, as the introduction of steamboats has upon our navigable rivers? Together with RAILROADS, locomotive engines are yet destined to make neighbors of those who now reside far remote from each other, and thereby pro-

duces a more permanent bond of union to the States than can otherwise possibly be effected.

The daily performance of the engines on the Liverpool and Manchester railway testifies the perfection which has been there attained in the conveyance of light goods and passengers, the ordinary rate of travelling being from 20 to 30 miles an hour; but they seem to be excelled by those in the neighborhood of Glasgow in another very important application of the power of locomotive engines, viz. the transmission of heavy goods, in which so great speed is not of such importance as the diminishing the expense of conveyance by increasing the quantity conveyed. The other day one of the engines on the Garnkirk and Glasgow railway, hauled a train of seventy loaded waggons from Gartkill colliery to the depot at Glasgow, a distance of 8 miles, in one hour and five minutes. The gross weight of the waggons was 287 tons, and of the engine and tender 14 tons 7 cwt., making a total weight of 301 tons 17 cwt. A great proportion of the distance is quite level. The ordinary resistance on a level line is nine lbs. per ton, so that the engine must have been exerting a power of about 2718 lbs. The diameter of the cylinder is 12½ inches, the length of stroke 22, and the pressure at 55 lbs. per square inch. The train extended over a distance of upwards of 270 yards, and presented to view a grand and interesting spectacle, while it afforded a most wonderful exhibition of locomotive power to those who take an interest in the important national question of the improvement of our internal means of communication.

The Saratoga Railroad Company have sent to England for another Locomotive Engine.—[Albany Daily Advertiser.]

LIVERPOOL AND MANCHESTER RAILROAD.—This stupendous undertaking, which is justly entitled to the lead of all such works, and has the greatest traffic of goods and passengers of any line in the known world, yet its blemishes are of a corresponding magnitude. It is the most absolute monopoly that has been granted this century; its insecurity of travelling by night, and bungling inconveniences at the ends, two rises of more than one yard in a hundred suffered to remain upon it; the repairs of half a year for locomotive engines alone being upwards of £12,600, must prove to every one that ever saw a railroad, that something must be wrong, and as to the dividends of eight pounds or guineas per annum, they are futile when compared to the immense gross income. The dividends have a right to be more than double what they are when the enormous fares are considered.

Observations on Railways, with Hints to Railway Companies. [From the London Morning Chronicle of September 17.]

MR. EDITOR.—The art of forming Railways and of enduring them, as means of transport, with the utmost degree of economy, velocity, and security, is yet in its infancy. To the promotion and construction of these works, or to the determination of their probable success, as durable fountains of profit, the thoughts and attention of engineers, of merchants, manufacturers, agriculturists, capitalists, indeed, of all the enterprising portion of the community, are as keenly directed as were the efforts of our immediate forefathers to the establishment of Canal Navigation.* The two most important enterprises of this nature now in activity—the Stockton and Darlington, and the Liverpool and Manchester Railways—have been highly lucrative from their outset: a fact, in the history of mercantile associations of this nature, as remarkable as it is encouraging. In a commercial sense, the objects of these two Railways are distinct; the one being limited, almost exclusively, to the transport of coal; the other combining the convenience of myriads of passengers, with the carriage of an infinite variety of merchandise. These two great, and hitherto successful, experiments may not be inaptly compared—as to their novelty, their purpose, their importance, and their results—to the two first specimens of artificial communication by water in this island, viz. the Sankey Navigation, and the Duke of Bridgewater's Canal. The comparison will hold good under each of these heads; and I confess that I am sanguine enough to think that the two Iron Ways will rival, in permanency of profit, the celebrated Waterways referred to; and, further, that Railways and Canals may co-exist, with fair gain to their respective proprietors. But, it behoves the authors of new and similar projects to inquire diligently into the particular causes of the success of these first experiments; to compare carefully the springs whence these parent Railways derive their traffic, with the sources relied upon as feeders to the projected lines; to investigate the most minute details of daily expense; to analyse rigidly the cause of wear and tear, as well as of all interruptions and accidents; in short, to make themselves as thoroughly masters of the subject, and to act with as much forethought and deliberation as an individual would do in a private venture. It is not upon the engineers that reliance should be placed for mercantile details or points of management; our business is simply that of workmen; it is upon mature and well-digested plans, aided by an EFFICIENT DIRECTION, that the prosperity of all associations of this nature must mainly depend.

* Professionally uninterested in Railways, I am impelled to submit the following hints and observations to the attention of the public, and of Railway Proprietors, by an ardent desire to see Railway conveyance rendered as secure as it is expeditious; and by the conviction that this great desideratum is not only practicable, but that its accomplishment is essential to the lasting profit of such undertakings. The promotion of the interests of humanity is the true aim and end of science; and Great Britain can furnish abundant examples to show that mankind appreciates so accurately the value of whatever contributes to its welfare, that the greatest honors and fortunes commonly crown the exertions of those who are most successful in perfecting inventions for the use of man. I feel, then, that no apology can be required for

* The canalization of Great Britain has, in fact, been accomplished within the memory of man; for there still lives one of the original proprietors and chief promoters of the Sankey Canal Navigation—the first artificial waterway in this island. I mean Nicholas Ashton, Esq. of Woolton, near Liverpool, now at the advanced age of ninety years. This canalized brook conveys the coal from the pits about St. Helens to the Mersey, near Runcorn. A railway has recently been opened between the same points, which will, probably, contend as successfully against its aqueous opponent, as does the Stockton and Darlington against the rivers and canals in its neighbourhood.

the public expression of sentiments on subjects so interesting to society, and to ourselves, as the prosperity of a great enterprise, and the preservation of our own existence.

The Proprietors of a Railway are as deeply concerned in insuring, to the utmost of their means, safety of life and limb to travellers, as in economising their own expenditure. These are matters of weighty import to the Liverpool and Manchester and to other established Companies; but they are of still greater consequence to those recently created for uniting the metropolis, by similar means of transport, with the northern marts of commerce. The London and Birmingham, and the Grand Junction Railway Companies, cannot be too diligent in ascertaining the various causes of the casualties which have occurred in Railroad conveyance; they cannot be too careful to avoid, IN THE ORIGINAL PLAN OF THEIR RAILWAY, any defects which may have had a share in occasioning accidents or hindrances on those already executed. The two enterprises referred to will require millions of capital for their completion; it is probable that the conveyance of passengers and goods will encounter, on these greater lengths of line, multiplied difficulties and delays; and it is possible that yet undiscovered sources of personal danger may present themselves. [Let it be borne in mind, too, that Railways, once laid down, cannot be altered in their dimensions like a turnpike road; tunnels, bridges, viaducts, &c. cannot be widened or narrowed at pleasure; the errors of their first formation will remain nearly, or altogether irremediable.]

It will, I doubt not, be granted, by persons conversant with the subject, that the distance, FOUR FEET EIGHT INCHES, between the two lines of the Liverpool and Manchester Railway, has been found in practice most FATAALLY limited, as, also, the pathway on either side of the lines. These scanty spaces render the descent of travellers from a carriage, or the unloading of a luggage wagon, not only dangerous, but nearly impossible, should an axle break, or other of the not unfrequent occasions for stoppage arise whilst passing embankments, or deep perpendicular cuttings. It is unnecessary for me here to particularise the many other inconveniences resulting from this, I fear, incurable fault in that railway.

The running of engines or carriages off the rails is another frequent cause of delay to trains of merchandise, as well as of danger to passengers, and inexpressibly awful would be the consequences were a train of coaches (suddenly diverted towards the other line, by some impediment on the road, or some derangement of the machinery) to encounter an engine proceeding in the opposite direction. Such a crash might indeed be disastrous! And who will be bold enough to affirm that so melancholy an event may not reasonably be expected, sooner or later, to occur?

I am not disposed, Sir, to imagine improbable, or barely possible catastrophes; nor do I desire to kindle, in the breasts of persons unaccustomed to travelling by railways, an apprehension that this mode of conveyance is attended with greater danger than the more usual ones. Such is not my opinion. On the contrary I believe that the records of travelling, either by land or by water, cannot supply data so satisfactory, on the score of safety to travellers, as those deducible from a comparison of the number of persons conveyed along the Liverpool and Manchester Railway with the number of accidents which have happened to them. But I do think that precautions might be, and ought to be adopted, to check the recurrence of many accidents, particularly those, most to be dreaded, arising from engines running off the rails. I am aware that this has been very partially effected (at the Sankey Viaduct, and at one or two other spots considered as particularly dangerous) on the Liverpool and Manchester Railway, by a very simple and not costly contrivance, first applied along a high embankment on the Bolton and Leigh Railway.

I allude to the introduction of a beam of wood, or continuous iron bar, placed parallel with and near to one of the rails on each line, of such height as to present a sufficient obstacle to the passage of wheels over it.

In laying down a new Railway, it would be well for Companies to consider, whether some such safeguard, extended throughout the line, should not form part of their original plan; whether twelve feet should not be allowed between the middle rails of a double Railway; and six feet for the width of pathway on either side. An additional defence against the possibility of collision between approaching trains might also be advantageously provided, by fixing a strong railing of moderate height along the middle of the roadway, and throughout the whole extent of the line. This railing would serve as a complete barrier to passengers crossing the road, to the imminent danger of their lives; and it might be so constructed as to form a support for a series of low lamps, which would, in every respect, be more suitable to Railways than elevated ones!

I cannot but think that had the width, above prescribed, existed between the two lines of the Liverpool and Manchester Railway, even without the safeguards mentioned, we should not have had to deplore the loss of Mr. Huskisson, and that the fatal calamity of the 1st of February last would not have been so extensive. Neither these nor other similar catastrophes could have occurred, or can occur, were a breast-high railing established between the lines.

The half-yearly Reports of the Liverpool and Manchester Railway Company are documents of inestimable value to all concerned in that or similar undertakings. The candid and just observations of the Directors of that Railway, in their last Report, leave no room to doubt that they are impressed with a due sense of the numerous defects of the engines now employed by them, and that they are not only on the alert to discover, but also well disposed to adopt, such improvement as may tend to diminish the cost of working, or to increase the performance of these machines. I fully concur in their remark, that "the locomotive engine is, beyond comparison, the most eligible, indeed the only efficient moving power for Railways;" nor can I refuse to accord to those Directors a full measure of praise for their sagacity in selecting this instrument as their motive force, in preference to horses or stationary engines, as well as for their fostering care of its infantine weakness. I am aware that an Edinburgh Reviewer, and other self-sufficient (perhaps, self-interested!) critics, have thought that, by ordering engines from every aspirant to locomotive glory, the Directors would have achieved still brighter conquests. I am not the panegyrist of the Liverpool Directors, but this opinion is groundless; and I do think that the learned Reviewer would act more creditably and usefully by confining himself to his compilations and cheap-knowledge books, than by giving public and anonymous vent to petty tales and slanders on the conduct and performances of men, whose practical science and labors have accomplished more in two years, for the benefit of their country, than all the scribblers in all the Reviewers will accomplish in two centuries.

The Locomotive Engine is a combination of the ideas and contrivances of many heads. That it should, with all its imperfections, have been brought to its present state of usefulness in so short a time, is highly creditable to the ingenuity and exertions of the Messrs. Stephenson, and of the other contributors to its actual mechanical form and powers. I know, however, that various very admirable schemes for increasing the power and durability of the boiler, as well as for improving the general arrangement and application of the engines, are contemplated by different contractors. But it is vain to expect that inventions, which may be termed rather skilful dispositions of parts than new discoveries, should see the light, when it is considered how heavy is the expense incurred by the engine-builder in experiment-

ing on so costly an apparatus, how uncertain is his success, and how immediate would be the adoption of his improvements by his rivals in trade. Nor can any reasonable man urge the Directors of a Railway to speculate in inventions; but they may hasten their development, and appropriate them to their service; they may, through timely encouragement, anticipate, by many years, the fruits of mechanical skill, and brighten the prospects of their own and similar enterprises.

The Directors of the Liverpool and Manchester Railway will, I trust, pardon me for suggesting to their consideration a measure which might possibly accelerate the march of improvement, and, at the same time, diminish, in no slight degree, the amount of that weighty item in their disbursements, "LOCOMOTIVE POWER." I advise them to repeat the trial of what they themselves have correctly styled a "happy expedient;" I mean that they should renew the offer of a reward for that engine which shall unite, in the most eminent degree, the now well-ascertained requisites to its perfection. Let the prize contended for be worthy the acceptance of engine-makers; let it be such as, to induce them to risk a failure in the strife; and such as, in the event of success, will constitute an ample remuneration for their skill and labor. I feel confident that the offer of One Thousand Guineas reward to the victorious candidate in such a contest, would be attended with results not less beneficial to Railways at the present era, than were those which came out of the first famous mechanical combat.

It appears that the working and repairs of the locomotive engines, on the Liverpool and Manchester Railway, cost, annually, about £24,000, or, in other words, THE STARTLING SUM OF £800 PER MILE, PER ANNUM, on the length of their line. Two-thirds of this amount are comprised under the sole head of repairs; to which outgoings should be added the interest upon, and depreciation of, a large stock of tools and materials, composing the workshops and hospitals; the latter of which are commonly filled to overflowing with sick or disabled Locomotives. Surely, then, one thousand, or even two thousand guineas, might be well applied in the endeavor to diminish so large a draught from the profits of the Company, for wear and tear is an absolute and irrecoverable loss.

I will now proceed to trace the outline of the broad principles on which such a trial of skill should be conducted; a trial which would bring competitors to the goal, the productions of whose efforts would far more than compensate the Company for the value of the stake.

I assume, as postulates, that the average weight of the best engines now on the Railway is sufficiently great, and that two eleven-inch cylinders, working under a pressure of steam of fifty pounds per square inch, are found to possess sufficient power. I then suggest, as bases, the following conditions:

1. That the maximum weight of the competing engines shall not exceed that of the best engine in the Company's employ.
2. That the maximum pressure of the steam shall be fixed, and shall be alike in all the engines; and that the calculated power shall be equal to that of two eleven-inch cylinders, with an 18-inch stroke, working under a pressure of steam of 50 lbs. per square inch.*
3. That all the competing engines shall commence working on a given day: their duty to be that of making complete trips, during a given period, between Liverpool and Manchester reciprocally, with trains of merchandise of a determinate and ascertained weight.
4. That in the event of EQUALITY of PER-

*That the greatest latitude of construction may be given to engine-makers, the dimensions of the cylinders should not be prescribed, merely the calculated power resulting from the bulk of steam consumed by the number of strokes of the pistons per minute. This is requisite in order to insure a fair trial, as all the engines, whatever may be their construction, should be on precisely equal terms as to their NOMINAL power; otherwise a proof of their ABSOLUTE power would not be conclusive in regard to their RELATIVE merits.

FORMANCE between any of the competing engines, or between them and any of those in the Company's employ, their RELATIVE powers and properties shall be decided by subjecting them to a proof of their ABSOLUTE powers and properties; and that this shall be the conclusive trial.

5. That one thousand guineas shall be awarded to the constructor of that engine which shall have proved itself superior both to all its competitors, and to any engine in the Company's use: that the Company shall purchase such engine for the sum of one thousand guineas, and order from its maker the next five engines which they may require.

6. That five hundred guineas shall be awarded to the maker of the second best engine, provided it be adjudged to possess advantages over the Company's engines; and that the Company shall purchase such engine at a fair valuation.

Every facility should be given to the candidates, previous to the trial, to prove their engines on the line, either with or without loads, subject to the convenience and rules of the Company. Twelve months should elapse between the publication of the challenge and conditions, and the day on which the competitors shall enter the lists.

I have recommended the Liverpool and Manchester Company the more especially to institute this trial, as their railway is in full operation, and consequently they would the sooner reap the advantages of those results, which cannot but prove important to them. But the scheme applies with equal force to all Railways, and, were a combat of this nature to take place on the opening of a new line, and PERIODICALLY on different lines, the whole engineering talent of the country would feel its stimulus, and be pressed into the service of Railways.

In furtherance of this design—viz., that of exciting the mechanical world to the improvement of Locomotive Engines, and of Railway conveyance generally—too great publicity cannot be given to all facts tending to illustrate the excellencies and defects of the existing system. A register should be kept and periodically published of the duty done by the engines. In one table might be presented a list of the engines in the employ of a company; the makers' names; the date of their use; the construction of the boiler; specifying whether with or without tubes; the diameter of the cylinders, and length of stroke; whether placed horizontally, vertically, or inclined; whether working on a cranked axle or otherwise; whether actuating two, or all four wheels, and their size, &c.; the pressure of the steam, the kind and weight of fuel burnt; the nature and amount of work done; the injuries sustained, and from what causes; the number of hours actually worked in a week, &c. &c. Such are the data which ought to be collected and analysed by the judicious engineer before he decides on his plans and executes an engine; but these facts are obtained with difficulty. It is, indeed, impracticable for any other than the mechanic residing contiguous to a Railway, to acquire that precise information on the respective merits of the various forms of locomotive engines in actual use, which can alone instruct him how to remedy the defects, and by what means to diminish the wear and tear of these costly machines.

A concise summary of the principal properties of a variety of engines, accompanied by a notice of their performance; of the casualties to which they have been subjected; of the parts which have needed repair or been renewed; arranged in a tabular form, and published MONTHLY, would give to the engineer, at one glance, more exact and valuable knowledge than could be acquired by him were he to pass his whole time on a Railway. It would stimulate the engine-men to be cleanly and diligent, as their reputation would be thus identified with that of their engines. They would become more observant of incipient imperfections, such as leakages, the loosening of bolts, the want of oil

to the wearing parts, the waste of water in the boilers, the stoppage of the pumps, &c. &c. and they would be more sedulous in preventing gross repairs, by timely precautions, were their too-often culpable negligence made notorious.

Of the efficacy of publicity in promoting a rapid advance towards perfection in the use of Steam Power, we have a case in point, from the effects produced by the printed monthly reports of the duty done by the pumping-engines in Cornwall. An inspection of the summary table for a series of years, given in Mr. John Taylor's "Records of Mining," will convince the most sceptical of the advantages which have accrued to the miner from this system. He will there learn that a bushel of coals, which, a few years since, raised only SEVENTEEN millions of pounds weight of water one foot in height, is now made to raise EIGHTY millions of pounds to the same height. This immense increase in the effective performance of the pumping-engine is chiefly attributed to the publicity given to the construction of various engines, and to the modes of applying their power. The same instrument, the PRESS, is now working a similar miracle in the mining districts of North Wales; and it may be rendered equally as effectual an agent in accelerating the perfection of Locomotive Engines and of Railway conveyance.

Facts of a still more interesting nature to the public might also be periodically communicated, not only without detriment to the proprietors of Railways, but to their manifest advantage. I refer to the accidents occurring, from time to time, to those employed or travelling on these roads. In the want of an authentic record of such casualties, (excepting in the event of loss of life,) any ill-informed gossip, or penny-a-line man, becomes the bearer of his version of "A DREADFUL ACCIDENT ON THE RAILWAY" to a newspaper editor, which goes the round of the journals, and "frights the isle from its propriety." Be such tale true or false, correct or exaggerated, the reputation of the Railway equally suffers. An antidote should be instantly applied, and this antidote would be found in a simple unvarnished statement of the case emanating from the Directors, and published by their authority. I could quote numerous instances illustrative of the truth of these remarks, and am acquainted with many persons whose natural timidity has been so excited by such garbled reports of accidents, as to deter them from venturing on a Railway. But were a full and explicit statement published of every occurrence of this nature worthy of note, accompanied by a proper explanation of its origin, the public would not be unduly alarmed, precautions would be enforced, and means would frequently be devised for removing some of those imperfections which still disfigure Railway conveyance; imperfections arising often from original bad construction, often from mismanagement, and which are the causes (though happily rare) of disasters to passengers.

In the persuasion that you, Sir, are ever ready to lend your columns for the advancement of knowledge and the arts, I do not hesitate to request your insertion of these hints and observations, should you deem them suited to their object, and likely to promote the perfection of a system of travelling, of which the town of Birmingham is about to become a centre. I am, Sir, your obedient servant,

A CIVIL ENGINEER.

Mr. Symington, the Original Inventor of Steam Vessels. By ROBERT BOWIE. [From the United Service Journal, for September.]

MR. EDITOR.—The article concerning steam navigation contained in your last Number has afforded me no little pleasure, as it assists materially in establishing the justice of the claims I am now engaged in advocating on behalf of a highly-talented and deeply-regretted relative, the late William Symington.

To alter the opinion of your intelligent and impartial contributor, with regard to Mr. Hulls, will, I am persuaded, require but examination

of the mode proposed for constructing the machinery and applying the power of steam,—a mode which has been pronounced, by skilful and practical mechanics, visionary and impracticable.

As to the Marquis de Jouffroy, his experiments are so completely unknown, that, for any benefit derived from them, they might as well never have existed. And it is the general belief respecting them that they were incomplete, and unfit for bringing the undertaking to a favorable conclusion. That such a belief was not unfounded may be inferred from the imperfect state of the steam-engine of that day, and the failure of the subsequent and imitative attempts said to have been made by De Blau and Fulton; the latter of whom, Fulton, was only able to accomplish his object after having had an opportunity of minutely examining Mr. Symington's boat, receiving explicit answers to printed questions, and jotting down his observations as he was carried along the canal on board of the vessel.

Contending, therefore, that the mere idea of the practicability of steam-navigation, without the ability for its realization, possesses but little if any value, I feel myself warranted in claiming for him who first successfully applies the power of the steam engine for the propulsion of vessels, the honor and credit of the invention; and I feel myself warranted in my proceeding, by the firm conviction that he was indebted to no one for the idea, it having occurred to himself long before he became aware of its ever having been entertained by others.

In 1784 he imagined it possible for steam power to be rendered applicable to terro-locomotion; and in 1786, he exhibited in Edinburgh a working model of a steam-carriage. He then bethought himself that the same power might be rendered available for propelling vessels. His first boat appeared on Dalswinton Lake, in 1788, and his second on the Forth and Clyde canal the succeeding year. Both of which as completely illustrated the practicability of steam-navigation as any ever since exhibited.

In your Magazine it is stated that the first boat appeared in 1789, on the Forth and Clyde canal, and resembled Hull's, in being a tug. This is an error, as neither the one of 1788, nor that of 1789, at all resembled the boat proposed by Hull; nor were they intended to be used solely as tugs; and furthermore, the first never made its appearance upon that canal. It was the vessel constructed twelve years afterwards for Lord Dundas, which was designed to be used for dragging shipping, a purpose which, on several occasions, she satisfactorily and successfully executed.

It has been attempted to represent the whole of these experiments as failures; but too much respectable and unquestionable evidence can be adduced in their favor to render any hostile assertions likely to be either accredited or believed—the more especially, as many practical, well-informed engineers have declared their conviction that the machinery was well contrived, and its mode of application most ingenious. Indeed the declaration may at once be hazarded, that in several important points it possessed many advantages over that which is even at present employed. And it may also be averred, that to be more highly prized, it needs but to be better understood.

As a proof of Mr. Symington's ingenuity, and of the obstacles which genius will surmount, may be mentioned, that although Mr. Hull's patent rights were said to have been prestrained, strictly guarded, and rigidly enforced, Mr. Symington invented and brought into use an improved steam-engine, which was more simple, manageable, and economical for many purposes than that of his celebrated contemporary and competitor, without, in the slightest degree, rendering himself liable to the charge of encroachment. And he gave still further evidence of inventive powers by *dismissing the beam*—a desideratum so important as to have called forth the following opinion from the writer of the article which has led to

this communication. "And if the beam shall ever be dismissed, and a rotatory motion obtained, the triumph over inertia and friction will raise the wonder still higher."

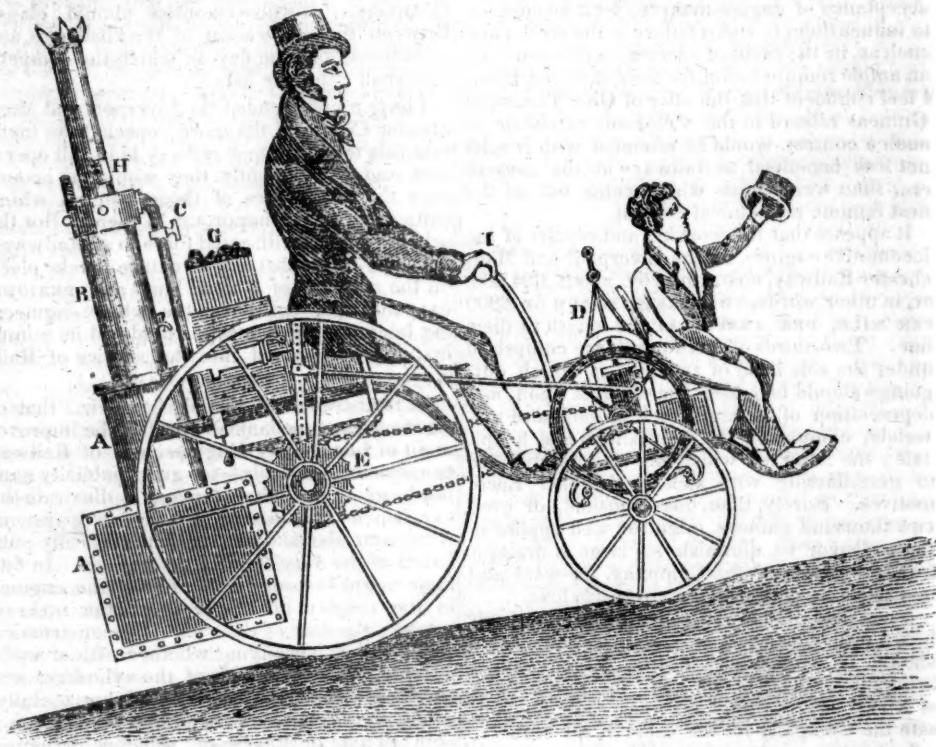
I have the honor to be, Sir, your most obedient servant,
ROBERT BOWIE.

[From the Mechanics' Magazine.]

TRAVELLING BY STEAM ON COMMON ROADS. —Although the state of the roads in this country will not at present allow us to be very sanguine of the advantages to be derived from carriages propelled by steam, we are satisfied that our readers will be gratified to possess a record of what is doing in other countries, and we hope it will rouse them to fresh exertions in promoting internal improvements here. The annexed account of the "Triumph" steam carriage, from a recent number of the London Mechanics' Magazine, will be read with interest, as also the observations it has elicited from

two most valuable correspondents to that journal. One of them, Mr. J. O. N. Rutter, has been for several years looked up to as an authority on most subjects connected with engineering. He claims to be the inventor of a method of substituting water for fuel in steam engines, alluded to at page 117, Vol. II. of this Magazine, and has stated that it has succeeded equal to his most sanguine expectations at the gas works in Lymington, of which he is the superintendent.

If our information is correct, we shall have it in our power to prove that the credit of the invention is due to an American citizen; and a patent was taken out for it in 1817, by Mr. James Morey, of New-Hampshire. Why it has not been acted upon we are at present uninformed, but we hope in our next to be able to give a full description of it, accompanied with such drawings as may be requisite.—[ED. MECH. MAG.]



The Triumph Steam Carriage. [From the London Mechanics' Magazine.]

SIR,—I did not intend to send you the prefixed rough drawing of my little Triumph steam carriage until I could faithfully inform you of its full powers, in regard to speed and weight propelled; but, from considerations of expense and ill health, delay succeeds to delay until I fear some claims of priority, which I pretend to, may be denied to me. It is the little carriage, (built in 1828, and first mentioned in your Journal of 29th May, 1830,) improved in construction, but the same in principle, and which was the first that ever ascended a rise of one in six; the chief alteration is the application of two main levers, to obviate the necessity of having very large wheels.

It is built on what I at present consider the best principles of my theory, namely, placing nearly the whole weight, when in motion and needful, on the propelling wheels, giving a varying leverage to the power, to any required extent, and making the line of direction of the power, when acting on the propelling wheels, to be such that its action and re-action shall as near as possible be parallel with the line of progress, by caus-

ing the fore carriage to have a tendency by its weight to propel the hinder part.

The main axle, wheels, and springs of this carriage, are so attached to the carriage frame that they can be shifted backward or forward to vary the centre of gravity of the whole at pleasure, and also keep the endless chain stretched.

A A is the tubular boiler; B, tubular chimney and steam chest; C, steam pipe, cased deep in flannel, &c.; D, a pair of cylinders, pistons, &c. working an endless chain wheel on the crank shaft and two small fly-wheels; E, another endless chain wheel, either fast or loose on the main axle; F, a pin on each fly-wheel, working alternately two main levers, that catch in two clutch wheels fixed on the main axle; G, coke box and water cistern; H, feed door in the chimney; I, pilot pole.

As soon as the engines start, the pins F on the fly-wheels begin, by means of the connecting rods, to pull at the main levers, which levers, by a re-action (if they are in gear), have a tendency to lift the fore carriage off the ground. (I have seen it thus lifted quite off.) By this operation the weight of the fore carriage is partly thrown

on the hind wheels, increasing their interlocking force with the ground, and at the same time tends to pull them round by its gravity. *Note*, I do not mean to say that power is thereby gained, as all power comes from the steam, but that the power is acting in its best direction, being a transfer of the power of the steam to the gravity of the fore carriage, as the steam, with a varying leverage, cannot well act direct on the main axle. When the road is level and good, the main levers are in a few seconds put out of gear, and the unvarying endless chain, E, put in.

I would say a word or two to Mr. Alexander Gordon and the *ultra* locomotionists. Steam locomotion on common roads is no longer a question of possibility, but of economy. Messrs. Ogle and Summers could tell, if they would, how much cheaper (or dearer) they went to Liverpool by steam than if horses had taken them (including wear and tear, but rejecting accidents); and Sir C. Dance could state his profits on the Cheltenham road. Both these and other parties richly deserve public assistance. But no! somebody will have a monument when dead, but no help whilst living. Yet the public is not to blame: for to whom of the many projectors must it extend its bounty?

There was once a carriage and four horses went twenty miles an hour, at Newmarket, for a wager, and won it, yet the mails still are conveyed at half that speed. These Ultras forget that steam pistons cannot go more than 2½ miles an hour, and at that rate they will, like a horse, do a great deal of work; but if they must propel any thing at 20 miles an hour, they must either have little to propel or there must be a great many of them; and the question is, can these many be kept cheaper than horses? This waits for proof. Locomotion is a darling theme of mine, but I have paid my visit to *Utopia*, and am come back. I wish again and again some one would build an 8 or 10 horse-power steam drag, to work one of the stage waggon at about its present rate of going, and then see what power could be spared for increasing the speed.

SAXULA.

March 14, 1833.

SIR,—“Saxula” has named his carriage the “Triumph”; but I shall not consider the triumph complete until he has run it daily for six or twelve months on a common road, and given an accurate statement of the costs arising from wear and tear, fuel, attendance, and interest of capital. It is no proof that the anxiously desired object has been attained,—of running steam carriages on common roads,—because a carriage has been constructed that will run a certain distance at a certain rate, with a certain number of passengers or tons of merchandize. Many important undertakings have proved splendid failures, simply, as I conceive, on account of the conditions implied in their principle being imperfectly understood, or totally neglected. The necessary conditions for locomotive carriages on common roads may, I think, be clearly ascertained by a careful attention to those employed on railroads. If the published statements in reference to the engines at work on the Liverpool and Manchester railroads are to be credited, it appears that, with friction and abrasion at a minimum, those engines involve a prodigious outlay of capital in their original construction and in their subsequent repairs. Now, supposing it should be found advisable to go

to a considerable expense in the construction of any future railroad, either in polishing it or in having a double line of road, each inclining throughout its whole length, but in opposite directions; and if, by these or any other arrangements, it should be found that the first expense of engines and their subsequent wear and tear would be thereby reduced, should we be any nearer than we are at present to turnpike road engines? I rather think we should be farther off than ever. On railroads, the friction, the agitation, and the consequent abrasion of surface, are found to be the chief impediments to success. How, therefore, can we expect to succeed, where we have to contend with more friction, more agitation, more abrasion, and, last, but not least, inequalities of surface, which do not exist on railroads? Far be it from me to think or say that the object is unattainable; many more unlikely things have happened, and will doubtless continue to do so almost every day. But we never can move safely towards a result until we thoroughly understand the principles of our experiment, and make ourselves conversant with its conditions. I wish “Saxula” success, and I sincerely hope he will favor your readers, from time to time, with the data he obtains in his experiments on this interesting subject.

J. O. N. RUTTER.

April 18, 1833.

SIR,—Some time has now elapsed since you favored me with the insertion of a few lines on long and short cranks, which I hazarded in opposition to the theory of locomotion promulgated by your ingenious correspondent “Saxula,” in which I promised the result of a series of experiments I had then in contemplation, but which I have been unable to accomplish, from want of time, change of residence, &c. Trusting, however, that my not having fulfilled my engagement may not debar me from your pages, I beg, as a constant reader, to offer a few remarks which have suggested themselves since reading the account of the “Triumph Steam Carriage” in your Journal of the 6th of April last.

I am still at a loss to comprehend what advantage “Saxula” anticipates from the use of the main levers over that of an ordinary crank, save that he will by that means be able to increase his power at a very great reduction of speed, and, I conceive, a great waste of power at the same time. In the first place, does he mean to deny that a short crank would accomplish the same end, provided the power were increased in due inverse ratio, and to uphold that more can be accomplished by the use of long cranks, or *main levers*, than by short ones? If so, I need say no more, for of that I shall never be convinced. Again, if the adhesion between the periphery and the road be sufficient to enable him with his long lever to lift the fore carriage off the ground, where is there any necessity for an increased resistance or *interlocking force*? Such a tendency would only cause a loss of power and straining to the machinery, besides which there would be an irregularity in the motion of the vehicle, which would also be attended with very serious waste of power, arising from the reciprocal action of the main levers. Although “Saxula” may have accomplished the ascent of a hill, having an inclination of 1 in 6, I still maintain that the same thing might be accomplished by means

of a short crank, provided the cylindrical power of the engine were increased proportionately. “Saxula” may perhaps here ask—but why cumber your engine with more power than is actually necessary? Let him make his engine on that principle, and run it on a road—not one rolled and brushed for the purpose—and he will soon find he will be “put to a stand still.” Hills are not the only obstacles which present themselves (Mr. Gurney well knows this). Newly-formed roads, or repaired ones, are much more serious objections to steam carriages on common roads. We will suppose a road (as is often the case) repaired at intervals, of say a quarter of a mile—would the “staid and sure” pair of long levers be used? or alternately levers and cranks, to the great annoyance of passengers, and prejudice of the machinery? So many delays would completely do away with steam travelling, if there were no other objections to it.

But the objections to such a mode of conveyance on common roads, compared with railroads, are so numerous, and rendered so obvious by the daily experience on the Liverpool and Manchester railway, as to need but little comment. I understand the estimated cost of an engine for common roads, capable of conveying about 20 passengers, is £1,500, while the utmost speed which could with safety, or *otherwise*, be accomplished, would be 12 to 14 miles per hour. Now, an engine capable of conveying upwards of 300 passengers in covered carriages on a railway, at 20 miles per hour, costs only £800 or £900. The wear and tear of an engine on high roads is also very considerably greater than that on a railroad, owing to irregularity of surface. I believe at 15 miles per hour it would be 7 times greater, and the force of traction 12 times as great. Supposing, therefore, that only the same consumption of fuel should take place, the diminished number of passengers would, of course, raise the fares in due proportion. But certainly the expediency of using locomotives on common roads can only be proved or disproved by actual experience. I heartily agree with “Saxula” in wishing some practical results to be given forth by the numerous and extensive speculators in such machines. I am afraid “Saxula” will find himself in error, when he states that an engine of two horses’ actual power will be able to accomplish the labor of two horses on common roads. This is daily proved to be impossible: even on a railroad a portion of power is lost by the re-action, or *backsliding* (if I may so term it), produced by the deposition of extraneous matter on the surface of the rail, which causes the wheel, or rather the engine, to retrograde in a slight degree. This I have proved very frequently when travelling on the above railway. I have in fine weather invariably found that 86 beats or strokes of the engine are necessary to traverse the distance between the ¼ mile distance accurately measured, thus proving that 2 revolutions are lost in each instance, the wheel being precisely 5 feet diameter. This I have observed at speeds of from 14 to 18 miles per hour. At 25 miles per hour nearly 4½ revolutions are lost. This, I think, would militate greatly against “Saxula’s” two horses.

I am, sir, yours, &c.

DUBITANE.

Liverpool, May 7, 1833.

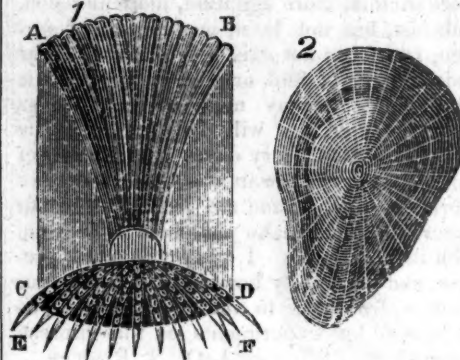
Wonders of the Microscope. [Arranged from Dr. Dick, on the Diffusion of Knowledge.]

In the universe we find all things constructed and arranged on the plan of *boundless and universal variety*. In the animal kingdom there have been actually ascertained about sixty thousand *different species* of living creatures. There are about 600 species of *mammalia*, or animals that suckle their young, most of which are quadrupeds—4000 species of *birds*, 3000 species of *fishes*, 700 species of *reptiles*, and 44,000 species of *insects*.* Besides these, there are about 3000 species of *shell fish*, and perhaps not less than eighty or a hundred thousand species of animalcules invisible to the naked eye; and new species are daily discovering, in consequence of the zeal and industry of the lovers of natural history. As the system of animated nature has never yet been thoroughly explored, we might safely reckon the number of species of animals of all kinds as amounting to at least *three hundred thousand*. We are next to consider that the organical structure of each species consists of an immense multitude of parts, and that all the species are infinitely diversified—differing from each other in their forms, organs, members, faculties, and motions. They are of all shapes and sizes, from the microscopic animalculum, ten thousand times less than a mite, to the elephant and the whale. They are different in respect of the construction of their sensitive organs. In regard to the *eye*, some have this organ placed in the front, so as to look directly forward, as in man; others have it so placed as to take in nearly a whole hemisphere, as in birds, hares, and conies; some have it fixed, and others moveable; some have *two* globes or balls, as quadrupeds; some have *four*, as snails, which are fixed in their horns; some have *eight*, set like a locket of diamonds, as spiders; some have several *hundreds*, as flies and beetles, and others above *twenty thousand*, as the dragon-fly and several species of butterflies. In regard to the *ear*—some have it large, erect, and open, as in the hare, to hear the least approach of danger; in some it is covered to keep out noxious bodies; and in others, as in the mole, it is lodged deep and backward in the head, and fenced and guarded from external injuries. With regard to their *clothing*—some have their bodies covered with hair, as quadrupeds; some with feathers, as birds; some with scales, as fish; some with shells, as the tortoise; some only with skin; some with stout and firm armor, as the rhinoceros; and others with prickles, as the hedgehog and porcupine—all nicely accommodated to the nature of the animal and the element in which it lives. These coverings, too, are adorned with *diversified* beauties; as appears in the plumage of birds, the feathers of the peacock, the scales of the finny tribes, the hair of quadrupeds, and the variegated polish and coloring of the tropical shell-fish—beauties which, in point of symmetry, polish, texture, variety, and exquisite coloring, mock every attempt of human art to copy or to imitate.

Not only in the objects which are visible to the unassisted eye, but also in those which can only be perceived by the help of microscopes, is the characteristic of *variety* to be

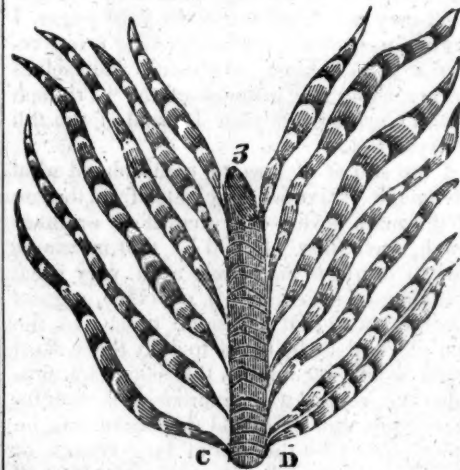
* Specimens of all these species are to be seen in the magnificent collections in the Museum of Natural History at Paris.

seen. In the scales of fishes, for example, we perceive an infinite number of diversified specimens of the most curious workmanship. Some of these are of a longish form, some round, some triangular, some square; in short, of all imaginable variety of shapes. Some are armed with sharp prickles, as in the perch and sole; some have smooth edges, as in the tench and codfish; and even in the same fish there is a considerable variety, for the scales taken from the belly, the back, the sides, the head, and other parts, are all different from each other. In the scale of a perch we perceive one piece of delicate mechanism, in the scale of a had-



dock† another, and in the scale of a sole beauties different from both.

We find some of them ornamented with a prodigious number of concentric flutings, too near each other and too fine to be easily enumerated. These flutings are frequently traversed by others diverging from the centre of the scale, and proceeding from thence in a straight line to the circumference. On every fish there are many thousands of these variegated pieces of mechanism. A small part of the feather of a peacock,‡ one-thir-

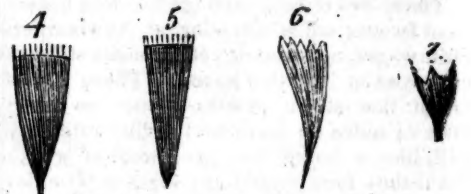


* Fig. 1 represents the scale of a sole fish as it appears through a good microscope. C D E F represents that part of the scale which appears on the outside of the fish, and A B C D the part which adheres to the skin, being furrowed, that it may hold the faster. It is terminated by pointed spikes, every alternate one being longer than the interjacent ones.

† Fig. 2 is the scale of a haddock, which appears diversified like a piece of net-work.

‡ Fig. 3 represents a small portion or fibre of the feather of a peacock, only one-thirtieth of an inch in extent, as it appears in the microscope. The small fibres of these feathers appear, through this instrument, no less beautiful than the whole feather does to the naked eye. Each of the sprigs or hairs on each side of the fibre, as C D, D C, appears to consist of a multitude of bright shining parts, which are a congeries of small plates, &c. The under sides of each of these plates are very dark and opaque, reflecting all the rays thrown upon them like the foil of a looking-glass; but their upper sides seem to consist of a multitude of exceedingly thin plated bodies, lying close together, which, by various positions of the light, reflect first one color and then another, in a most vivid and surprising manner.

tieth of an inch in length, appears no less beautiful than the whole feather does to the naked eye, exhibiting a multitude of bright shining parts, reflecting first one color and then another in the most vivid manner. The wings of all kinds of insects, too, present an infinite variety, no less captivating to the mind than pleasing to the eye. They appear strengthened and distended, by the finest bones, and covered with the lightest membranes. Some of them are adorned with neat and beautiful feathers, and many of them provided with the finest articulations and foldings for the wings, when they are withdrawn and about to be folded up in their cases. The thin membranes of the wings appear beautifully divaricated with thousands of little points, like silver studs. The wings of some flies are *filmy*, as the dragon-fly; others have them stuck over with short *bristles*, as the *flesh-fly*; some have rows of feathers along their ridges, and borders round their edge, as in *gnats*; some have hairs, and others have hooks, placed with the greatest regularity and order. In the wings of moths and butter-flies there are millions of small feathers of different shapes,* diversified with the greatest variety of bright and vivid co-



lors, each of them so small as to be altogether invisible to the naked eye.

The variety of forms in which *animal life* appears, in those invisible departments of creation which the microscope has enabled us to explore, is truly wonderful and astonishing. Microscopic animals are so different from those of the larger kinds, that scarcely any analogy seems to exist between them; and one would be almost tempted to suppose that they lived in consequence of laws directly opposite to those which preserve man and the other larger animals in existence. When we endeavor to explore this region of animated nature, we feel as if we were entering on the confines of a new world, and surveying a new race of sentient existence. The number of these creatures exceeds all human calculation. Many hundreds of species, all differing in their forms, habits, and motions, have already been detected and described, but we have reason to believe that by far the greater part is unexplored, and perhaps forever hid from the view of man. They are of all shapes and forms: some of them appear like minute atoms, some like globes and spheroids, some like hand-bells, some like wheels turning on an axis, some like double-headed monsters, some like cylinders, some have a worm-like appearance, some have horns, some resemble eels, some are like long hairs, one hundred and fifty times as long as they are broad, some like spires and cupolas, some like fishes, and some like animated vegetables. Some of them are almost visible to the naked eye, and some so small that the breadth of a human hair would cover fifty or a hundred of them, and others so minute that

* Figs. 4, 5, 6, 7, represent some of the different kinds of feathers which constitute the dust which adheres to the wings of moths and butterflies, and which, in the microscope, appear tinged with a variety of colors. Each of these feathers is an object so small as to be scarcely perceptible to the naked eye.

millions of millions of them might be contained within the compass of a square inch. In every pond and ditch, and almost in every puddle, in the infusions of pepper, straw, grass, oats, hay, and other vegetables, in paste and vinegar, and in the water found in oysters, on almost every plant and flower, and in the rivers, seas, and oceans, these creatures are found in such numbers and variety as almost to exceed our conception or belief. A class of these animals, called *Medusa*, has been found so numerous as to discolor the ocean itself. Captain Scoresby found the number in the olive-green sea to be immense. A cubic inch contained sixty-four, and consequently a cubic mile would contain 23,888,000,000,000,000; so that, if one person should count a million in seven days, it would have required that eighty thousand persons should have started at the creation of the world to have completed the enumeration at the present time. Yet, all the minute animals to which we now allude are furnished with numerous organs of life as well as the larger kind, some of their internal movements are distinctly visible, their motions are evidently *voluntary*, and some of them appear to be possessed of a considerable degree of sagacity, and to be fond of each other's society.*

In short, it may be affirmed without the least hesitation, that the beauties and *varieties* which exist in those regions of creation which are invisible to the unassisted eye are far more numerous than all that appears to a common observer in the visible economy of nature. How far this scene of creating power and intelligence may extend beyond the range of our microscopic instruments, it is impossible for mortals to determine; for the finer our glasses are, and the higher the magnifying powers we apply, the more numerous and varied are the objects which they exhibit to our view. And as the largest telescope is insufficient to convey our views to the boundaries of the great universe, so we may justly conclude that the most powerful microscope that has been or ever will be constructed will be altogether insufficient to guide our views to the utmost limits of the descending scale of creation.

We shall now continue our illustrations:

Fig. 1 represents a *mite*, which has eight legs, with five or six joints in each, two feelers, a small head in proportion to its body, a sharp snout and mouth like that of a mole, and two little eyes. The body is of an oval form, with a number of hairs like bristles issuing from it, and the legs terminate in two hooked claws.

* The following extract from Mr. Baker's description of the *hair-like animalcule* will illustrate some of these positions. A small quantity of the matter containing these animalcules having been put into a jar of water, it so happened that one part went down immediately to the bottom, while the other continued floating on the top. When things had remained for some time in this condition, each of these swarms of animalcules began to grow weary of its situation, and had a mind to change its quarters. Both armies, therefore, set out at the same time, the one proceeding upwards and the other downwards; so that after some time they met in the middle. A desire of knowing how they would behave on this occasion engaged the observer to watch them carefully; and, to his surprise, he saw the army that was marching upwards open to the right and left, to make room for those that were descending. Thus, without confusion or intermixture, each held on its way; the army that was going up marching in two columns to the top, and the other proceeding in one column to the bottom, as if each had been under the direction of wise leaders.

Fig. 2 represents a microscopic animal which was found in an infusion of *anemony*. The surface of its back is covered with a fine mask, in the form of a *human face*; it has three feet on each side, and a tail which comes out from under the mask.



Fig. 3 is an animalcula found in the infusion of *old hay*. A shows the head, with the mouth opened wide, and its lips furnished with numerous hairs; B is its forked tail; D its intestines, and C its heart, which may be seen in regular motion. The circumference of the body appears indented like



the teeth of a saw.

Fig. 4 shows the *wheel-animal*, or *vorticella*. It is found in rain-water that has stood some days in leaden gutters, or in hollows of lead on the tops of houses. The most remarkable part of this animalcula is its *wheel-work*, which consists of two semi-circular instruments, round the edges of which many little fibrillae move themselves very briskly, sometimes with a kind of rotation, and sometimes in a trembling or vibratory manner. Sometimes the wheels seem to be entire circles, with teeth like those of the balance-wheel of a watch; but their figure varies according to the degree of their protusion, and seems to depend upon the will of the animal itself; a is the head and wheels, b is the heart, where its systole and diastole are plainly visible, and the alternate motions of contraction and dilatation are performed with great strength and vigor, in about the same time as the pulsation of a man's artery. This animal assumes various shapes, one of which is represented at Fig. 5, and becomes occasionally a case for all the other parts of the body.



Fig. 6 represents an *insect with net-like arms*. It is found in cascades where the water runs very swift. Its body appears curiously turned as on a lathe, and at the tail are three sharp spines, by which it raises itself and stands upright in the water; but the most curious apparatus is about its head, where it is furnished with two instruments, like fans or nets, which serve to provide its food. These it frequently spreads out and draws in again, and, when drawn up, they are folded together with the utmost nicety and exactness. When this creature does not employ its nets, it thrusts out a pair of sharp horns, and puts on a different appearance, as in Fig. 7, where it is shown magnified about 400 times.



Fig. 8 is another animalcula, found in the same infusion, called a *tortoise*, with an umbilical tail. It stretches out and contracts itself very easily, sometimes assuming a round figure, which it retains only for a moment, then opens its mouth to a surprising width, forming nearly the cir-



cumference of a circle. Its motion is very surprising and singular.

Fig. 9 is the representation of an animalcula found in the infusion of the bark of an *oak*. Its body is composed of several ringlets, that enter one into another, as the animal contracts itself. At a b are two lips, furnished with moveable hairs; it pushes out of its mouth a *snout* composed of several pieces sheathed in each other, as at c. A kind of horn, d, is sometimes protruded from the breast, composed of furlbelows, which slide into one another like the drawers of a pocket telescope.

Fig. 10 is an animalcula, called *great-mouth*, which is found in several infusions. Its mouth takes up half the length of its body; its inside is filled with darkish spots, and its hinder part terminated with a singular tail.

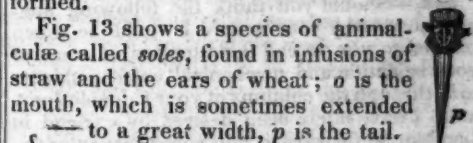
[Fig. 11 represents the *proteus*, so named on account of its assuming a great number of different shapes. Its most common shape bears a resemblance to that of a swan, and it swims to and fro with great vivacity. When it is alarmed, it suddenly draws in its long neck, transforming itself into the shape represented at m, and at other times it puts forth a new head and neck, with a kind of wheel machinery, as at n.

Fig. 12 is the *globe animal*, which appears exactly globular, having no appearance of either head, tail, or fins. It moves in all directions, forwards or backwards, up or down, either rolling over and over like a bowl, spinning horizontally like a top, or gliding along smoothly without turning itself at all. When it pleases, it can turn round, as it were upon an axis, very nimbly, without removing out of its place. It is transparent, except where the circular black spots are shown; it sometimes appears as if dotted with points, and beset with short moveable hairs or bristles, which are probably the instruments by which its motions are performed.

Fig. 13 shows a species of animalcula called *soles*, found in infusions of straw and the ears of wheat; o is the mouth, which is sometimes extended to a great width, p is the tail.

Fig. 14 represents an animal found in an infusion of *citron flowers*. Its head is very short, and adorned with two horns like those of a deer; its body appears to be covered with scales, and its tail long, and swift in motion.

Fig. 15 is a representation of the *eels* which are found in paste and stale vinegar. The most remarkable property of these animals is that they are *viviparous*. If one of them is cut through near the middle, several oval bodies of different sizes issue forth, which are young *anguille*, each coiled up in its proper membrane. A hundred and upwards of the young ones have been seen to



issue from the body of one single eel, which accounts for their prodigious increase.

Fig. 16 exhibits a species of animalcula shaped like bells with long tails, by which they fasten themselves to the roots of *duck-weed*, in which they were found. They dwell in colonies, from ten to fifteen in number.

It may not be improper to remark, that no engraving can give an adequate idea of the objects referred to above; and, therefore, whoever wishes to inspect nature in all her minute beauties and varieties must have recourse to the microscope itself.

What we already know of these unexplored and inexplorable regions gives us an amazing conception of the intelligence and wisdom of the Creator, of the immensity of his nature, and of the infinity of ideas which, during every portion of past duration, must have been present before his all-comprehensive mind. What an immense space in the scale of animal life intervenes between an *animalcule*, which appears only the size of a visible point, when magnified 500,000 times, and a *whale*, a hundred feet long and twenty broad! The proportion of bulk between the one of these beings and the other is nearly as 34,560,000,000,000,000 to 1. Yet all the intermediate space is filled up with animated beings of every form and order! A similar variety obtains in the vegetable kingdom. It has been calculated, that some plants which grow on rose leaves, and other shrubs, are so small that it would require more than a thousand of them, to equal in bulk a single plant of *moss*; and if we compare a stem of *moss*, which is generally not above one-sixtieth of an inch, with some of the large trees in Guinea and Brazil of twenty feet diameter, we shall find the bulk of the one will exceed that of the other no less than 2,985,984,000,000 times, which multiplied by 1,000 will produce 2,985,984,000,000,000, the number of times which the large tree exceeds the rose-leaf plant. Yet this immense interval is filled up with plants and trees of every form and size! With good reason, then, may we adopt the language of the inspired writers,—“How manifold are thy works, O Lord! In wisdom hast thou made them all.”

To the Editor of the American Railroad Journal:

PHILADELPHIA, Oct. 24th, 1833.

SIR,—Should you think the following suggestion worthy your notice, I would be much obliged to you to call the attention of some of your scientific and mechanical correspondents to it, through the columns of your valuable Journal. I have lately been desired by a friend in London, to forward to him some particular accounts of the different steamboats now in operation in waters near you, and particularly, on the Hudson, and of recent experiments, &c. &c.; but I have as yet not been able to find any work on the subject, which contains the desired information; and further, on examining all the different works that touch on the subject, I perceive they merely tell of wonderful experiments made in England, and in my opinion, these which are recorded as *wonderful* are not to be mentioned in the same day, with those practical machines now in daily use on our waters, and I am persuaded that should some person, fully competent, publish a small work containing a precise account of the different engines and boats now in operation, say on the Hudson and East rivers, that they would receive ample compensation from the sale of the work, as well as confer a lasting favor on the reading public. I wish to see

our own splendid engines and boats recorded as being something worthy of American industry. Your friend and subscriber,

G. W. A.

We cheerfully give place to the above communication, with a hope that it may induce some one familiar with the subject to supply a work of the character referred to; and will endeavor, if no one else is disposed to undertake it, to obtain, and publish in the Journal, some account of our best steamboats, both on the North and East rivers.

[For the American Railroad Journal.]

MR. EDITOR,—Should the Boston and Providence Railroad Company refuse, on equitable terms, to unite with the Rhode Island Railroad Companies, would it not be desirable to the Worcester Railroad Company, much of the stock of which is owned in this city, to unite their road to the Providence and Boston Railroad, by a branch intersecting their road near Boston, striking the valley of the Charles river, and through Wrentham to the line of the State of Rhode Island; and by making terms with the Providence and Boston Company, who have twelve miles exclusive privilege, commencing at Fox Point, would be enabled to command the principal travel on this great thoroughfare from Boston to Providence and Long Island Sound. A privilege to make said branch no doubt could be obtained of the Legislature of Massachusetts.

X.

[From the Mobile Register and Patriot of 24th Oct.]

MARINE RAILWAY.—A model of a newly constructed Marine Railway has been left at our office by Lieut. Gedney of the United States navy for the inspection of the public. We understand that it has received the decided approbation of the Board of Navy commissioners, as well as of practical mechanics who have examined it, and that measures have been taken for testing its value by a Gentleman at Charleston who is erecting a railway on a scale sufficiently large to haul up ships of any size. The principle and the machinery are extremely simple, and we would invite the attention of those interested in the establishment near this city to the model now on the table of the Reading Room.

Bristol and London Railway.—The people of Bristol are going to make a bold effort to restore the prosperity of that once flourishing and still important city, by forming a railway thence to London. It is calculated that this undertaking, which is to be called the Great Western Railway, will cost three millions, to be raised in shares of £100 each. The formation of such a line of communication will be of great utility, not only to Bristol, but to the whole of the west of England, and to the southern counties of Ireland and Wales. The intercourse and traffic along it will be immense. The passengers between London and all parts of the counties of Berks, Wilts, and Gloucester, Hereford, Monmouth, Glamorgan, Somerset, Devonshire, Cornwall, and a very large portion of those from the south of Ireland will travel along it. Amongst the cities and towns it will touch, or be likely to be united with by branch roads, are Windsor, Oxford, Reading, Newbury, Salisbury, Marlborough, Bath, Bristol, Gloucester, and Merthyr Tydvil, whilst all other travellers proceeding to London from Bridgewater, Taunton, Exeter, Plymouth, Falmouth, and the other towns of the west will avail themselves of it from Bristol to the metropolis. The Irish counties principally benefited will be those lying to the south of Dublin. Amongst the most important articles in the carrying department will be the agricultural produce of Berks and Wiltshire, the woollen manufactures of Gloucester and Somersetshire, the iron and coal of south Wales, the West India and other produce imported into Bristol, and the corn and cattle of Wexford, Waterford, Cork, &c. When the railway is formed, of which there is little doubt, Bristol will be one of the greatest thoroughfares in the British dominions.

CORNS.—A piece of moistened tobacco, and bound around the toe, is recommended by the New-Hampshire Spectator, as a sure cure of corns.

AGRICULTURE, &c.

[From the New-York Farmer.]

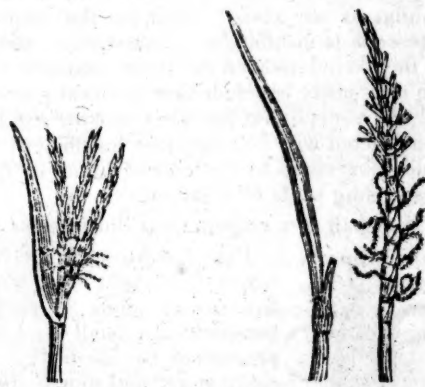
Cultivation and Drawings of Gama Grass.
By the Editor.

Within three or four years much attention has been excited respecting this grass, particularly in the Southern States. Dr. Hardey, of Missouri, was among the first to bring it before the public as a prolific grass, and one of immense importance to the Southern section of the Union, where corn stalks or leaves are almost the only fodder for live stock. It is considered to be a native of the alluvial soils of the Southern States, but is found growing wild as far north as the banks of the Connecticut river. It succeeds well on sandy, and even barren soils.

The seeds are put in drills 18 inches apart, and the plants should be hoed sufficient to prevent the growth of weeds. The first season they spread and cover the whole surface. During the second, they are cut once a month from May or June to October or November. Being a perennial, it will probably continue to produce for several years without renewal. Those who are zealous advocates for the introduction of this grass into Southern husbandry in particular, say that it will produce 70 to 80 tons of green hay, or 20 to 30 of cured hay to the acre.

Some botanists describe four species of *Tripsacum*, but that called Gama Grass is supposed to be the *T. monostachyon*; others enumerate only three, and, in the opinion of some writers, two of these are identical. Professor Eaton describes only two, considering the *T. monostachyon* a variety of the *T. dactyloides*.

The following drawings we take from the Encyclopædia of Plants—the smaller engraving is the *T. dactyloides*, and the others the *T. monostachyon*:



THE PROFESSION OF A FARMER.—The North American Magazine, reviewing P't Lindaley's address, which we noticed in former numbers of the Farmer, makes the following extract and comments:

“I have long thought that our college graduates often mistake their true path to honor and usefulness, in making choice of a learned profession, instead of converting agriculture into a learned profession, as it ought to be, and thereby obtaining an honest livelihood in the tranquil shades of the country.”

In the praise of Agriculture he might have gone further, and extolled it as an occupation at once sublime and useful—which ennobles man, gives peace to his mind, virtue to his heart, placidity to his countenance, and calmness to his passions. Absorbed in the holy contemplation of mute but eloquent Nature, or engrossed in the avocations that give sustenance and comfort to his fellow beings, he is

equally blessed in the fruit of his labors or the fragrance of his meditations.

CULTIVATION OF SILK IN THE NORTHERN PART OF THE UNITED STATES.—The numerous and detailed experiments which we have from time to time laid before our readers, on the subject of silk culture, must have convinced them that no obstacle exists to the successful prosecution of this great and important branch of domestic industry. The following experiment, from the N. H. Spectator, made by Dr. Frost, of Plainfield, N. H., in the latitude of 43° 30', not only establishes the fact that the worm will perfect its cocoon in the Northern States, but that the whole business is perfectly simple. He states that he had no knowledge on the subject from personal experiment and observation previously to his present undertaking. The Doctor observes :

On the 20th June last past my eggs were hatched. I counted out 1,500, and took a few more to supply the place of those that should die in the several stages, say from 50 to 100. These were uncouned. My calculation was to raise about 1,500. By reason of the cold and rainy summer the worms were retarded in their growth, as will always happen—warm and dry weather being the climate suited to the full perfection of the worm, and to facilitate its growth and maturity ; yet the food in either case will be about the same—the only difference will be the length of time required for the insect to eat the same quantity of leaves. The first cocoon was wound on the 38th day of the age of the silk worm. After the fourth moulting, or in other words, shedding of their skin—for they shed their skin four times during their life, before they commence winding their balls or cocoons—they are usually about 10 days in winding up their cocoons. Previous to their moulting the fourth time, I counted about 1,450 ; so that 50 had died out of the 1500, besides the worms I held in reserve as above stated. Of these 1,450 worms, besides those that died during this last age of the worm, and during their winding, I counted 912 that remained on the shelves the 40th day—585 on the 42d day—303 on the 43d day—186 on the 44th day—90 on the 45th day—43 on the 46th day—26 on the 47th day—13 on the 48th day. In ten days from the beginning of winding, all had wound their cocoons except 13 worms. In 4 days more these were all wound. The whole time the silk worms were progressing through their several ages, each age designated by the moulting, including the winding, were 53 days—the usual time is from 42 to 45 days—retarded no doubt from the cold and dampness of the season. There died in the whole, 257 during the several ages, till the completion of the cocoons. I had 1,243 cocoons of all descriptions, and but few, say 15, that would not reel off. The reserved uncouned worms are not included in this estimate.

The weight of cocoons before reeling, and as soon as they were picked from the bushes, weighed 4 lbs. 5 oz., 20 cocoons weighed precisely one ounce.

Raw reeled silk	6½ ounces
Raw silk	1½ ounce.

Making the whole product of silk nearly one half pound.

The weight of leaves consumed and wasted was 75 lbs.

After I had found the quantity of leaves the 1,500 worms consumed, I made a comparison with a statistical table communicated in a letter to the 20th Congress of the U. S. by Hon. James Mease, on the method of rearing silk in Bavaria, and found by this table, 20,000 silk worms consumed 1,000 lbs. mulberry leaves—exactly corresponding to 75 lbs. for every 1,500 worms—and that from 7 to 10 lbs. of cocoons make a pound of raw, or reeled silk—from this estimate the product of my experiment nearly coincides, for 4 lbs. and 5 oz. produced 7½ ounces of silk.

Nor does this estimate of the consumption of leaves and the product of silk materially differ from the estimate and exact result of Count Dondolo—transmitted to Congress by the Hon. Richard Rush, then Secretary of State.

It will readily be perceived that the rearing of silk worms, in our state is practicable and with due management equals the product raised in Bavaria, and the careful management in the extensive laboratory of Count Dondolo, where 8 ounces of eggs, or 160,000 worms are reared. In this laboratory the leaves are chopped, the thermometer regulates the temperature, and the pyrometer the dampness of the atmosphere ; and every measure of precaution is used to secure the worms from disease—by ventilation, by stoves, and by cleanliness. On reading these treatises and observing all the nice directions contained therein, any person would almost shrink from the task and become discouraged, before they attempted to enter a field where so many obstacles seemed to threaten him. I have chopped no leaves—made no fire but once or twice, and then when the weather was extremely cold and damp for the season. I gave them what they would eat, and they appeared to know what to do with the leaves as well as any other insect, and not more at a loss about it.

I am fully of opinion that the culture of silk is as easily learned as any other kind of business or art—and that many families in every town would find as profitable a reward for their labor as our rich farmers do, by correspondent care and exertion.

ELIAS FROST.

Plainfield, August 27, 1833.

IMPROVED CORN.—This is the season of the year when all those farmers who have not previously attended to the subject should go to their cribs, and select some of the best ears for the purpose of planting, with a view of obtaining in the course of a few years an improved variety of corn. Among the experiments which we have seen recorded, the following seems to ripen early in comparison with others :

Dr. Oliver Fiske of this town has left with us a specimen of corn, of a kind which he has raised for three years past, and which appears worthy the attention of our farmers generally. It has now been fully ripe for near a month, and being thus early, it is not only safe from the frost, but, in consequence of filling out and ripening in the warmer part of the season, is more likely to be sound and heavy than that which ripens later. The kernel and ear are about the size of the common corn, and Dr. Fiske thinks it will yield as large a crop as any corn he ever raised.—[Worcester Spy.]

CORN COBS FOR CATTLE AND BREAD.—In a western paper we find the following. If the facts detailed should be sustained by future experiments, we know not why the use of the cob and corn ground together may not become general. We have heard objections made by farmers to the use of the cob, but do not recollect what they are.

Many farmers in this country have within a few years converted the cobs of Indian corn to a use formerly unknown.

The corn and cobs are ground together and given to swine and other domestic animals for the purpose of fattening them. We understand the experiments thus far have proved successful, and that swine and cattle intended for slaughter will grow as fast as on any other fodder. A gentleman in Shrewsbury, Mass. has for seven or eight years used corn and cobs cracked and ground together for provender, and he says it is the best he has ever used for fattening cattle. An experiment was tried a few years ago by feeding one ox with corn and oats ground, the other with corn and cobs—the two oxen being so well matched that no one, on viewing them was satisfied which was best : accordingly they were fed as above. Each ox had an equal quantity at a time, except the

one which had corn and oats sometimes became dainty, and would not eat his allowance, while the other kept his regular course. The allowance for both was about three pecks per day. The cattle were taken to market, and weighed about 2800. The one fed on corn and oats had 162 lbs. of tallow. The one that was fed on corn and cobs had 163 lbs. of tallow, and the purchaser of the two oxen pronounced the beef of the latter to be worth half a dollar on the hundred more than that of the other, on account of the color of the beef.

It has also been proved by actual trial, that good and palatable bread may be made from corn and cobs, ground about half and half, sifted as usual, and the addition of the usual quantity of rye meal.

Mills for grinding corn and cobs together have been erected in several small towns in Massachusetts.

CHESNUT ORCHARDS.—The price of chesnuts in our markets has led us to think that many farmers might, with profit, devote a portion of their less productive lands to the cultivation of the chesnut. They have commanded, this season, from \$6 to \$2 50 per bushel. At this rate an orchard would be profitable, independent of the timber. The tree is of quick growth, and produces abundance of shoots or sprouts from the stump.

EXHIBITION OF STOCK.—Our friend A. W. has sent us the following, which we suppose is part of the report of the Berkshire Agricultural Society. The spirit that prompts to send stock for exhibition to neighboring fairs is very commendable and patriotic.

Even the citizens of our sister states have done us the honor, by gratuitous exhibitions of stock, to encourage our exertions, and to advance the objects of the society and the interests of the country. The committee beg leave to name Caleb N. Bement, Esq. of Albany, as deserving the thanks of the society for his interesting exhibition of two imported cows and a bull, of the short horn or Durham breed. They are also much indebted to Mr. Thomas Dunn, of Albany, for his exhibition of a buck and lamb of the New Leicester or Bakewell breed. It is presumed that this breed of sheep is entirely new to most of the farmers of the country, and it is well worthy of their consideration, whether their flocks may not be greatly improved by them, particularly as it regards the quantity of the fleece and the size of the sheep. Mr. Bates, of Vermont, exhibited to the society a fine horse, which was much admired for his beauty and excellence. The committee noticed with great pleasure several fine animals from the excellent stock of cattle belonging to the Hon. Henry W. Dwight, to whose patriotic and spirited exertions the agricultural community is largely indebted for a steady and progressive improvement of stock in the county.

PLANTING FOR CHILDREN.—The strong desire existing in the human breast to provide for our offspring converts that toil, which produces sweat on the brow, into pleasant and cheerful exercise. The farmer rises early and labors until the setting of the sun, in planting, sowing, and reaping—and all this to feed and clothe his family, in the hope, too, of having a little annual surplus for his children when he is gone ; but, alas, how many toil in vain !—twenty, thirty, or forty years of care and labor appear to have made no provision for the rising members of the family. Had there been plantations of valuable timber or fruit trees made by the farmer in his young days, their produce would now give a son or daughter a considerable "setting out." Remember this is the season for planting.

NEW-YORK AMERICAN.

NOVEMBER 2, 4, 5, 6, 7, 8—1833.

LITERARY NOTICES.

MEMOIRS OF BARON CUVIER, by Mrs. R. Lee. 1 vol. New York: J. & J. HARPER.—The biographer of Cuvier is an English woman, the widow of the African traveller Bowdich, through whom, and his scientific and adventurous pursuits, she became known to Cuvier and his family; and when deprived by death of her husband, found in that family, and in its chief especially, consolation and friendship such as is rarely extended to other than near and dear connections. The heart of the grateful woman is consequently manifested in this memoir, which is rather the narrative of the beautiful private life, and the fine moral qualities of Cuvier, than a notice of his literary or his political career, though these of course enter into the general story. We are sure this work is one that will be much read. We extract the account of the last moments of Cuvier, a small part of which indeed has appeared before in our columns, but of which the ensemble requires a repetition.

Although occasionally subject to slight ailments, the health of M. Cuvier, generally speaking, was good, and his carriage was used by him more as a saving of time than a matter of necessity; therefore the sudden summons he received to quit his earthly labors, was an event for which his friends and his country were not prepared. Never were his intellectual faculties more brilliant; never was his great mind more fully possessed of that clearness, that comprehensiveness, which so peculiarly marked it, than at the time of his seizure. His life of temperance and rectitude, at the age of sixty-two, had preserved the corporeal existence unimpaired, and also contributed to the perfection of his mental vigor; for more than forty years he had been unremittingly laboring to perfect his great views in science and legislation; and concerning the former he was about to give to the world the results of his researches and reflections. "His intention was to review all his works, and put them on a footing with the last discoveries, and then to deduce from them, all the consequences, all the general principles, which appeared to him to emanate from such an assemblage of facts, though he did not think it possible, in the present state of human knowledge to establish a general theory. All his studies, all his meditations had convinced him of the philosophical principle, that organized beings exist for an end, for a special object; but he did not admit any scientific theory, and with all his energy maintained that it was not yet possible for any to be formed." But even the entire publication of these facts, of these deductions, was denied to us by the inscrutable ways of the Almighty; perhaps we were not yet worthy of penetrating so deeply into the mysteries of creation as had been given to this one gigantic intellect, and I dare not call the death of M. Cuvier premature, when I think that by so doing I should question the decrees of that Providence to whom we owe the very existence of him whom we deplore, by whom that life was lent to us to increase our sense of his wisdom, and to enlighten us by its example.

M. Cuvier had sought forgetfulness of the storms that were passing without the walls of his peaceful abode, in a greater devotion than ever to his home pursuits; that is, he gave up his evening visits, and the few relaxations he had permitted himself to enjoy. The cholera raged around him, and he saw those fall who were younger and apparently stronger than himself; those whom he loved, and those whose services were essential to the state. Public disturbances filled the streets of Paris, while pestilence stalked through the multitude in every direction. Secluding himself, then, entirely from society, except that of his family; after going through the daily routine of his public duties, he returned to his labors, with an intenseness, which, added to his share of the pervading gloom, was calculated to injure the springs of life. No one, however, could foresee its effects on his constitution; and he himself said, that he had never worked with so much real enjoyment; and he rapidly advanced, not only in the vast undertakings then begun, but in the preparations for others. On Tuesday, the 8th of May, he opened the third and concluding part of his course of lec-

tures, at the Collège de France, on the history of Science, &c., by summing up all that had been previously said. He forcibly inveighed against that heresy in natural history, which derives every thing in this vast universe from one isolated and systematic thought, and shackles the future of science with the fallacious progress of the moment; he pointed out what remained for him to say respecting the earth and its changes, and announced his intention of unfolding his own manner of viewing the present state of creation; a sublime task, which was to lead us, independent of narrow systems, back to that Supreme Intelligence, which rules, enlightens, vivifies, which gives to every creature the especial conditions of its existence, to that Intelligence, in short, which reveals all, and which all reveals, which contains every thing, and which every thing contains. In the last part of this discourse, there was a calmness, a clearness of perception, an unaffected and unrestrained manifestation of the contemplative and religious observer, which greatly added to its force, and which involuntarily recalled that book which speaks of the creation of the earth and the human race. The similarity was avoided rather than sought; it was not to be found in the words, but the ideas; and at once flashed across the minds of his auditors, when the great professor declared, that each being contains in itself an infinite variety, an admirable arrangement for the purposes for which it is intended; that each being is good, perfect, and capable of life, each according to its order and species, and in its individuality. In the whole of this lecture there was an omnipresence of the Omnipotent and Supreme Cause: the examination of the visible world seemed to touch upon the invisible; the search into the creation, necessarily invoked the presence of the Creator; it seemed as if the veil were to be torn from before us, and science was about to reveal eternal wisdom. Great, then, was the effect produced by the concluding sentences, which seemed to bear a prophetic sense, and which were the last he ever addressed to his audience. "These," said he, "will be the objects of our further investigations, if time, health, and strength, are given to me, to continue and to finish them with you." Those who were versed in human destiny, seemed to feel that his sphere of action was even then placed out of this world, and that he had pronounced his farewell. So near the great and awful tribunal, what other words, what other thoughts than those contained in this lecture, could have so plainly shown the preparation already made for his journey thither?

I am told that the profound emotion occasioned by this last discourse was universal, and that few left the hall without an undefined feeling of sadness, and sentiments of reverence, far beyond the power of expression. On the same day, M. Cuvier, as usual, attended a council of administration in the Jardin des Plantes, and bestowed his last cares on that immense establishment, which owes so large a portion of its treasures to his constant and active solicitude, and to his extreme generosity. "By turns protected and protecting, Mr. Cuvier had there resisted the political vicissitudes which changed all but the sacred asylum of men and things. It would seem as if a special grace from Providence had suffered him to remain, during thirty-eight years of revolution, in the same place and with the same occupations. The great mind, the pure intentions, the devoted and disinterested heart, alone are suffered to effect such miracles."

In the evening of Tuesday, M. Cuvier felt some pain and numbness in his right arm, which was supposed to proceed from rheumatism. On Wednesday, the 9th, he presided over the Committee of the Interior with his wonted activity. At dinner that day, he felt some difficulty in swallowing, and the numbness of his arm increased. Never can the look and the inquiry he directed to his nephew, when he found that bread would not pass down his throat, be forgotten; nor the self-possession with which he said, as he sent his plate to Madame Cuvier, "Then I must eat more soup," in order to quiet the alarm visible on the countenances of those present. M. Frédéric, the younger, sought medical advice; and an application of leeches was made during the night, without producing any melioration. The next day (Thursday) both arms were seized and the paralysis of the pharynx was complete. He was then bled, but without any benefit, and from that moment he seemed to be perfectly aware of what was to follow.

† Alluding to the theory of unity of composition. This and the following citations are taken from a description of this admirable lecture, as noted by a distinguished auditor, the Baron de

He, with the most perfect calmness, ordered his will to be made; and in it evinced the tenderest solicitude for those whose cares and affection had embellished his life, and for those who had most aided him in his scientific labors. He could not sign it himself, but four witnesses attested the deed. He sent for the good M. Royer, who was so soon to follow him, to make a statement of the sums he had expended, out of his private fortune, on the alterations of the rooms behind his house, though the affliction of this Chief du Bureau d'Administration was so heavy as almost to disable him from doing his duty. M. Cuvier alone was tranquil; and, perfectly convinced that all human resource was vain, he yet, for the sake of the beloved objects who encircled him, submitted without impatience to every remedy that was suggested. The malady augmented during the night, and the most celebrated medical practitioners were called in: emetics were administered by means of a tube, but, like all other endeavors, they did not cause the least alteration. Friday was passed in various, but hopeless attempts to mitigate the evil; and, perhaps, they only increased the suffering of the patient. In the evening the paralysis attacked the legs; the night was restless and painful; the speech became affected, though it was perfectly to be understood. He pointed out the seat of his disorder, observing to those who could comprehend him "Ce sont les nerfs de la volonté qui sont malades;" alluding to the late beautiful discoveries of Sir Charles Bell and Scarpa, on the double system of spinal nerves; he clearly and precisely indicated the changes of position which the parts of the limbs yet unparalyzed rendered desirable; and he was moved from his own simple and comparatively small bed-room, into that saloon where he had been the life and soul of the learned world; and, though his speech was less fluent, he conversed with his physicians, his family, and the friends who aided them in their agonizing cares. Among other anxious inquirers came M. Pasquier, whom he had seen on the memorable Tuesday; and he said to him, "Behold a very different person to the man of Tuesday—of Saturday. Nevertheless, I had great things still to do. All was ready in my head; after thirty years of labor and research, there remained but to write; and now the hands fail, and carry with them the head." M. Pasquier, almost too much distressed to speak, attempted to express the interest universally felt for him; to which M. Cuvier replied, "I like to think so; I have long labored to render myself worthy of it." In the evening, fever showed itself and continued all night, which produced great restlessness and desire for change of posture; the bronchiae then became affected, and it was feared that the lungs would soon follow. On Sunday morning the fever disappeared for a short time; consequently he slept; but said, on waking, that his dreams had been incoherent and agitated, and that he felt his head would soon be disordered. At two o'clock in the day, the accelerated respiration proved that only a part of the lungs was in action; and the physicians, willing to try every thing, proposed to cauterize the vertebrae of the neck: the question, Had he a right to die? rendered him obedient to their wishes; but he was spared this bodily torture, and leeches and cupping were all to which they had recourse. During the application of the former, M. Cuvier observed with the greatest simplicity, that it was he who had discovered that leeches possessed red blood, alluding to one of his Memoirs, written in Normandy. "The consummate master spoke of science for the last time, by recalling one of the first steps of the young naturalist." He had predicted that the last cupping would hasten his departure; and when raised from the posture necessary for this operation, he asked for a glass of lemonade, with which to moisten his mouth. After this attempt at refreshment, he gave the rest to his daughter-in-law to drink, saying, that it was very delightful to see those he loved still able to swallow. His respiration became more and more rapid; he raised his head, and then letting it fall, as if in meditation, he resigned his great soul to its Creator without a struggle.

THE NEW ENGLAND MAGAZINE FOR NOVEMBER. Boston: J. T. BUCKINGHAM.—This is a very clever number of our cleverest Magazine. It is original, powerful and spirited. The *Equus redivivus* is capital. The notice of Stuart and Hamilton deals too harshly with the former, and too leniently with the

† "The nerves of the will are sick."

§ A month before his illness, he had read a paper before the Institute upon a memoir of Scarpa's, on this distinction between the nerves of will, and those of sensibility.

latter—especially on the score of intentions. The Nervous Man we are glad to see resumed, and give our readers the pleasure of the following extract from it:—

THE DOCTOR AND HIS PATIENT.

"Ma foi!—ces Medecins sont de vilaines gens!"

So saith Mons. Renard, in his play of the *Legatee*; but so say not I. My physician has just left me. He is a clever fellow, and it may be a skilful, withal. But he has the folly to pretend to cheerfulness, and laughs by main force over his own jokes—the unhappy man! Does he think to deceive people by it? A merry physician, indeed!—as well talk of a laughing death's head—the cackination of a monk's *memento mori*. Heaven help the doctors! From the court physician down to the veriest quack who ever dosed with herbs or steam à la *Esquimaux*, I commiserate every mother's son of them. This life of ours is sorrowful enough in its best estate—the brightest phasis of our being is "sicklied o'er with the pale cast" of the future and the past. But, it is the lot of the physician to look only upon the shadow;—to turn away from the house of feasting and go down to the house of mourning; to breathe day after day the atmosphere of wretchedness;—to grow familiar with suffering; to look upon humanity disrobed of its pride and glory—robbed of its fictitious ornaments—weak, helpless, naked—and undergoing the last fearful metempsychosis from its end and godlike image—the living temple of an unshrined divinity, to the loathsome clod, and the all inanimate clay. There is no behind him—there is no before him. He is hand and glove with misery by prescription,—the ex-officio gauger of the "ills which flesh is heir to." What to him are the much-eulogized charms of home—the holy comforts of one's fireside? He has no home, unless it be by the bedside of the sick—the querulous—the dying. Hurrying perpetually from one scene of misery to another, he knows nothing of the quiet happiness of those "sleek-headed men who sleep o' nights." He realizes, more than any other, the truth of that maxim, that

"Where ignorance is bliss,
"Tis folly to be wise."

His ideas of beauty—perhaps even the affections of his heart—are regulated by the irrepressible associations of his profession. Others may talk of their "ladye loves" as angels—sylphs—seraphs—he knows better—he knows that woman, as well as man, is "of the earth, earthy." Through the soft and beautiful veil of what we call *delicacy*, he sees only the consuming canker of incipient disease. Has his fair one a form of faultless symmetry? He thinks of the *subjects* of his anatomical studies. Does her beautiful smile unveil a set of pearls? He thinks of his dental operations. Does the blush of feeling or modesty mantle, of a sudden, neck, cheek, and brow,—a variable play of coloring, like sunset upon tremulous water? He calls to mind his last case of fever. Does the bright and eloquent blood glow steadily and richly through her fair cheek? He remembers his hectic patients. Tell him of a young lady's sentimental melancholy, and he will forthwith answer you by a dissertation upon dyspepsia. Tell him of broken hearts,—of dying for love—of the "worm i' the bud" feeding upon the damask cheek of beauty,—of the mental impalement upon Cupid's arrow, like that of a Janizary upon the spear of a Janizary; and he will talk to you of liver complaints—of tight lacing—of fashionable exposure—of lack of exercise.

I have sometimes thought that Sheridan's Doctor, in "St. Patrick's Day," was no caricature; indeed, there seems to be something very natural in his description of his dear, deceased helpmate. "Poor Dolly!—I shall never see her like again; such an arm for a bandage—veins that seemed to invite the lancet! Then her skin, smooth and white as a gallop; her mouth as round and not larger than the mouth of a penny phial; and her teeth—none of your sturdy fixtures—ache as they would, it was but a small pull, and out they came,—I believe I have drawn a half a score of her dear pearls—(swoops)—but what avails her beauty? She has gone and left no pledge of our love behind—no little babe to hang like a label upon papa's neck. Death has no consideration—one must die as well as another—fair and ugly, crooked or straight, rich or poor—flesh is grass—flowers fade!"

But, to return to my physician. Never man had a kinder—punctual in attendance—lavish of his drugs—perfectly deferential to the opinions of his patient. As I recount, for the thousandth time, the symptoms of my case, he never fails to congratulate me upon my peculiar good fortune in securing the services of one

so able and willing to assist me as himself—significantly assuring me, in the language of Hippocrates's first proposition, that, "Vita brevis; Experimentum periculosum; Judicium difficile." He has, if I mistake not, all the skill and kind wishes of Moliere's Toinet, who disdained to "amuse himself with the small fry of common diseases"—the trifles of rheumatism, vapors, agues, &c. "I would have," said he, "diseases of importance—good continual fevers, good plagues, good confirmed dropsies, good pleurisies,—this is what pleases me—this is what I triumph in;—and I wish, sir, that you had all these diseases—that you was abandoned by all the faculty—despaired of—at the point of death,—that I might demonstrate to you the excellency of remedies."

THE COMMON SCHOOL ARITHMETIC; by CHARLES DAVIES, Professor of Mathematics at West Point, &c. New York: N. & S. WHITE.—They who have some experience of the labor and difficulties of instruction, are those to whom we must always look with most hope for amelioration in the forms by which knowledge can be imparted: nor is there any higher or more useful employment of talent, than that which seeks to render plain, precise, and clear, the elements of any branch of learning. It is therefore with satisfaction we find a man, eminent as Professor Davies is known to be as a teacher, occupied in removing the difficulties which lie in the path of young beginners. This little book, prepared for the use of academies and common schools, and for those young men who may be preparing for the Military Academy at West Point, is divided into sections, each subject occupying a section, and each section followed by a series of questions which the learner should be required to answer in his own language, so that it may be perceived whether he has comprehended the idea and reason of the rule, or only learnt its words. Every thing seems to us to be stated with the greatest clearness in these pages.

THE HISTORY OF NUBIA AND ABYSSINIA; BY THE REV. MICHAEL RUSSELL: author of 'Egypt and Palestine,' &c. constituting Vol. LXI of HARPER'S FAMILY LIBRARY.—This is in some sense a supplement to Vol. XXIII of the Library, by the same author, containing a view of 'Ancient and Modern Egypt,' of which Ethiopia—now known as Nubia and Abyssinia—was the civilizer, and imparted to it a knowledge of the arts. After being, as it were, the parent of nations, it was for long centuries shut out from the knowledge of, and all intercourse with, Europe, of which the interest was finally aroused to this ancient people by the report, that, in the midst of Mahometan races, there was in Ethiopia a Christian people, preserving in their purity the rites and doctrines of that Church as originally communicated to them within less than three centuries of its foundation. Travellers soon made these people better known, and we have here the summary up to the latest period of all that has been written concerning them—including notices of the geology, zoology and botany of these regions.

A GUIDE TO AN IRISH GENTLEMAN IN SEARCH OF A RELIGION, by the Rev. MORTIMER O'SULLIVAN. Philadelphia: CAREY, LEA & BLANCHARD.—The Rev. Mr. O'Sullivan is master of his arms, and he manages them in this publication with the good temper, ease, and self-possession of one justly confident in his own powers. The Search is certainly a very taking book; but we do not think any one will be the worse off for having such a guide as this to accompany it. Polemics, if ever beneficial, can only be so when conducted in so good a tone and with such perfect decorum as in the volume before us.

THE HEADSMAN, A TALK; by the author of 'The Bravo,' &c. 2 vols. Philad. CAREY, LEA & BLANCHARD.—If books are to be judged by their effect upon the reader, we may state a comparative opinion of two of Mr. Cooper's works, in a few words. The Spy we read through, without stirring from the spot where we first took it up: the Headsman, with

all the aids of a pelting storm without, we could not master in two days, and after repeated trials. Possibly the fault is in us; possibly also in the writer. But we do not mean ourselves to criticize.

NEW MUSIC.—We have this week from J. A. L. Hewitt, & Co. 137 Broadway, the following songs.

Day is gently breaking—words by C. Jeffries—music by S. Nelson.

The mother—words and music by the same.

Apollo's gift—a collection of airs from various composers arranged for the flute, and *trois baguettes* for the piano.

We conclude with letter No. II, from our Western traveller.

Rodrechtville, Pa. Oct. 19.

The last red hues of sunset were just dying over the western extremity of the road we had long been following, when a herd of cattle, under the guidance of a woolly-headed urchin, collecting indolently around an extensive farm-yard, reminded us alike that it was time to seek shelter, and that one was at hand. A few paces further brought us to the door of a large stone building, displaying with the usual insignia of an inn, an unwonted neatness in all its out-door arrangements: unharnessing our four-footed fellow travellers we proceeded, in spite of the threatening outcry of a huge ban-dog chained at its entrance, to bestow them comfortably in a stable near at hand. A Canadian pony, with a couple of goats, the companionable occupants, seemed hardly to notice the intrusion—and leaving an active mulatto ostler to reconcile any difficulties which might arise between our pampered steeds and a sorry looking jade, which just then entered to claim a share of the comforts at hand, we soon unconsciously ourselves before a crackling wood fire in the comfortable apartment where I am now writing.

Every mile of our route to-day has given some new occasion to admire the scale upon which farming is conducted in Pennsylvania. The fences, indeed, are not remarkable for the order in which they are kept; but while the enclosures themselves are tilled with a nicety which preserves the utmost verge of a field from shooting up into weeds or brushwood, the barns into which their harvests are gathered, are so spacious and solidly built, that they want only architectural design to rival in appearance the most ambitious private mansions. Stone is almost the only material used here in building, and the massive profusion in which, not only the barns, but the smallest outhouses upon the premises of these sturdy husbandmen, are piled upon their fertile acres, is such as would astonish and delight the agriculturist accustomed only to the few and frail structures with which the farmers of most other sections of our country content themselves. The establishment of our host is admirably supplied with these lordly appurtenances in which a true tiller of the soil may so justly show his pride. The huge cathedral-looking edifice which towers above his farm-yard, would make as proud a temple as could be well reared to Ceres, even by Triptolemus himself.

The most picturesque country we have yet seen is that immediately around Easton. Indeed, the first view that opened upon us when gaining the brow of a wooded hill, about half a mile from the town, was so fine as to make us forget the regret with which we had a few moments before bade adieu to our prince of landlords and his blooming daughters. The Lehigh, for about a half a mile in extent, lay in the form of a crescent beneath us—a wooded ravine striking down to either horn, and undulating fields—some ruddy with buckwheat stubble, and some green from the newly sprouting wheat, filled up the curves. A grey stone barn stood here and there on an eminence against the bright morning sky, while sheltered below on the alluvial flats formed by the river, a white-walled cottage or two might be seen reposing by its cheerful current. The Lehigh Canal winding through the valley, like a younger sister bent on the same errand, beside the stream from which it takes its name, added not a little when viewed at such a distance to the gathered beauties of the scene.

We took our breakfast at Bethlehem, and availing myself of an hour's necessary delay to give the horses theirs, I left my friend puzzling himself over a German newspaper and strolled off to look at the village. It is a place of considerable interest, not less on account of its ancient and peculiar appearance than the Moravian Institutions which have rendered it so celebrated. I was fortunate enough to meet with Mr. Rile, the principal of the Female Seminary, who, upon my asking him some trivial question about that excellent establishment, offered in the most polite manner, though I was wholly unknown to him, to show me through the building. It is a plain stone structure of some 80 feet in length, subdivided internally into lecture rooms and dormitories like some of our colleges; one range of small apartments being used entirely as washing rooms by the pupils, and having all the necessary furniture for that purpose neatly arranged about each. These, like every other part of the establishment, have their peculiar superintendent, and standing thus distinctly by themselves form an essential feature in the economy of the institution, and with the extensive play-grounds in the rear of the building, evince the attention which is paid to the health and personal habits, as well as the intel-

lectual improvement, of its inmates. I was shown into the school-rooms of the several classes, and had ample opportunity, as the ruddy bright-eyed occupants rose to receive my conductor, to observe the happy effect of the life they led upon their personal appearance. A fresher, fairer assemblage of youthful beauty has rarely greeted my eyes. Several of the apartments were furnished with pianos, and my curious entrance into these smiling domains startled more than one young musician from her morning's practicing. I was, as you may suppose, a little, a very little, confused at being thus exposed to the full broadside gaze of a hundred "boarding-school misses." This though, however it might forbid my examining their features in detail, did not prevent me from observing that their general expression was happy and natural—two sources of attraction not so very common in the sex but that they will still strike one even when displayed, as was the case in this instance, in mere children.

I subsequently visited the burial ground of the place which I contemplated with no slight interest. The disposal of the dead is as true a test of civilization in a community, as the social relations of the living. The taste which embellishes life passes with the arts attendant upon it, from one nation to another, like a merchantable commodity; but the sentiment that would veil the dreariness of the grave and throw a charm even around the sepulchre, that would hide the forbidding features of that formal mound, and shelter the ashes beneath it from contumely—this is a characteristic springing from some peculiar tone of national feeling and radically distinctive of the community that possesses it. The philosopher, it is true, may sneer at our care of this bodily machine when the principle that gave it motion has ceased to actuate it; but how stolid is he who can look upon the ruin of a noble edifice, even though made irretrievably desolate, with apathy; or who would not fence up from intrusive dilapidation, halls hallowed whether by the recollection of our own personal enjoyments or the memory of the great and good of other times. It is one and the same feeling which arrests our steps beneath a mouldering fortress, and which induces a pilgrimage to the tomb of a departed poet; which kindles our indignation against the plunderer of the Parthenon, that "titled pilferer of what Time and Turks had spared;" and which makes it ready to consume the retches who tore the bones of Milton from his sepulchre.

The calm sequestered privacy of the Bethlehem burial ground would have satisfied even the particularity of Sir Lucius O'Trigger, whose encouraging suggestion to his non-combative friend Acres, "that there was good lying in the Abbey," shows that he had an eye to his comfort in these matters. It stands aloof from the bustling part of the village, near a noble church which still faces on one of the principal streets. The approach from the church, which has grounds of its own in the form of an ornamented terrace around it, is through a narrow green lane. At the entrance of this, shaded by a clump of willows, stands a small stone building called, I believe, from the purposes to which it is applied, "The Dead House." Here the bodies of the dead are deposited for many hours previous to interment. The head is left uncovered, and life, if by any possibility it be yet remaining, has a chance of renewing its energies before the jaws of the tomb close for ever over its victim. I looked through the grated windows, but saw nothing except an empty bier in the centre, and several shells adapted to coffins of different sizes leaning against the wall. With the usual portosity of human nature, I half regretted that the solemn chamber was at the moment untenanted, and passed on to the place of which it is the threshold.

There my eye was met by the same neat appearances and severe taste which seems to prevail throughout the economy of the Moravians. The graves, arranged in rows with an avenue through the centre dividing the males from the females, are in the form of an oblong square flattened on the top with a small slab reposing in the centre. On this are cut simply the name of the deceased and the dates of his birth and death—a meagre memorial—but enough; and I could not help—after deciphering a number of these moss-covered stones upon which the dews of more than a century had wept—turning with distaste from a few flaring marble slabs at the further end of the yard, upon which the virtues of those beneath were emblazoned in the most approved modern forms.

I left the spot, thinking it a pity that a greater number of trees did not, by shading the grounds, complete their beauty, and felt willing that the young locusts which skirt them round should have time to fling their branches further toward the centre before I should have occasion to claim the hospitality of the place.

Need I say how truly, until then, I am,

Yours.

H.

FOREIGN INTELLIGENCE.

LATE FROM FRANCE.—By the Sully, from Havre, we have Paris and Havre papers of 1st ult. They furnish little political news. The rumors from Constantinople were numerous, of insurrectionary movements there; but nothing farther was known, except that a great fire occurred there on 1st September.

Talleyrand had arrived in Paris, and had a long private interview with the King.

The National and the Tribune, prosecuted for their articles, stirring up the Parisians to oppose by force if necessary, the erection of forts around Paris, were acquitted by the Jury.

The *Florida* and the *Isaac Hicks* had arrived at Havre from this port. In the *Estafette*, of Monday, 30th, we find this paragraph respecting a passenger in the *Florida*, who is not named:

On Saturday a deplorable occurrence took place on board the *Florida*. A young American coming from New York to finish his medical studies at Paris, was remarked during the passage for his taciturnity and solitary disposition. Whether from regret of home, or private griefs, or merely disgust of life, on nearing the port he asked the captain for some laudanum to check a tooth-ache. A phial containing some was given to him without distrust, and shortly afterwards he was found lifeless, having swallowed nearly the whole of it. He had, it subsequently appeared, attempted ineffectually to destroy himself some days before, by a wound which was discovered in his side.

By the annexed extract it will be seen that the Bohemian meeting of the Sovereigns of Russia and Austria had broken up.

[From the *Estafette* of 1st October.]

Letters from Vienna, state that on the 19th of September, the Emperor Nicholas left *Munchen Gratz* for Modlin, where he is to have a great review. He is expected in St. Petersburg about the middle of October. Before leaving *Munchen Gratz* he distributed many decorations, and became himself the proprietor [*proprietaire*] of a regiment of Austrian Hussars.

The Emperor and Empress of Austria left on the same day for Bruun. The Duke of Nassau passed two days at *Munchen Gratz* during the residence there of the Monarch.

All the diplomatic personages who had gone from Vienna to Bohemia, were expected back by the 26th September.

We have looked more carefully over our files of Paris papers by the Sully, but do not find any thing of interest. The movements of the ci-devant Duchess of Berri, now Madame *Lucchesi Palli*, are only ridiculous. The prestige of her influence was destroyed by the *accouchement* in the chateau de Blaye. The speculations as to the object of the Bohemian conference between the sovereigns of Russia and Austria abound, but very little light is thrown on it, though for good it could not be. Mr. Livingston and his suite, and some of the officers of the Delaware had been presented to, and dined with the King. These civilities however, will not pay the five millions of dollars of indemnity from France, though they may soothe the irritation more extensively felt, than acknowledged, induced by the cavalier treatment of this country by Louis Philippe's ministry in postponing till the close of the session of the Chamber, when the members was impatient to be gone, and had moreover been put out of humor in various ways, the consideration of the treaty with the United States and of the appropriations necessary to carry it into effect. We hope much, however, from the efforts of Mr. Livingston, backed as they will be by so just a cause.

A Paris paper of the 28th September has the following:—"The King has received in private audience the officers attached to the United States ship Delaware. These officers are seven in number. The Captain, first, second, third fourth Lieutenants, Captain of Marines, and Chaplain. The King received them with much cordiality and even accompanied them through the visits they made to the different apartments in the Tuilleries.

"The Aid de Camp on service for the day at the palace and who by a lucky chance, happened to be General Bernard, afterwards conducted these gentlemen to the grand gallery of the museum. They are besides, invited to dine with his Majesty to-morrow at St. Cloud."

From London there are accounts by one day later by the packet ship *Samson*. They present a little later intelligence from Lisbon, but without any interest.

LONDON, SEPT. 30, TWELVE O'CLOCK.—Private Letters have been received this morning, brought by a merchant vessel from Lisbon, dated the 18th instant. Up to that date affairs remained tranquil, no further attack or demonstration having been made by the Miguelite army. It is likewise positively reported that the steam vessel, the *Lord of the Isles*, has been captured by two of the Queen's ships. The steamer had on board twenty seven French Officers who were going out to join Marshal Bourmont, and was also heavily laden with ammunition and warlike stores. It is likewise stated, that a small schooner laden with shot had shared a similar fate.

The *Hague Journal* states, after a letter from Lubeck, that a Russian 74 gun ship, with a crew of 750 men has been wrecked upon the coast of Finland, and only 15 men saved.

The London Spectator says, "A plot to assassinate the Emperor of Russia has been discovered at St. Petersburg, in which several Poles are said to be implicated. A report has also been circulated, that letters from General Lafayette were found in possession of one of the conspirators, urging him to the commission of the deed. This the gallant and high-minded old General most indignantly denies; and we suppose there is scarcely a human being who would not at once acquit him of the charge."

IRELAND.

The Marchioness Wellesly does not come to this country, and Mrs. Littleton, the daughter of the Noble and Illustrious Chief Governor, is to discharge the functions of Vice Queen at the Irish Court.—[Dublin Evening Mail.]

The Royal William steamboat has arrived, from Quebec, at Cowes, having made her first passage across the Atlantic in 21 days.

Tom Terry, an English convict, is now Thomas Terry, Esq. of New South Wales, and one of the largest wool growers in that country. His income is estimated at £25,000 sterling per annum.

LATER FROM JAMAICA.—By the arrival of the packet brig Neptune, we have Kingston dates to the 14th ult. more than a month later than our previous advices. The colonial legislature had been in session nearly a week, and the reply of the Assembly to the Governor's speech, was moderate and conciliatory. They assure him, that as soon as he shall lay before them the information to which he alludes in his speech, relative to the emancipation bill, it will be considered with that serious attention, which a subject on which the fate of the colony depends, so justly demands. His Excellency rejoined, expressing the unmingled satisfaction with which he had received their reply, and promising to co-operate with them in their labors. There is, however, great excitement, as might be expected, on the subject; and the Jamaica Despatch, an ultra slave paper, holds a high bearing, denouncing the act of Parliament as arbitrary and unjust, and submission to it as evidence of pusillanimity.

LATEST FROM BUENOS AYRES.—By the brig Paulina, Captain Ricketson, the British Packet, published in that city, of the 31st August, has been received, from which we make the following extracts:

On the 23d of August, the British brig Prompt, Barnes, from Liverpool, was totally lost near the entrance of the river Plate, at a place called Garzon, about seven miles South of Cape St. Mary. All on board were drowned except the Captain and one sailor.

BUENOS AYRES, Aug. 31.—The Director of the Vaccine Establishment in this city, has issued a notice to the public, stating that the small pox is making horrid ravages in Cordove; and that from the number of persons who are continually arriving from that province, considerable danger exists that the disease may be thus introduced in Buenos Ayres, and attack those who have been vaccinated.

BUENOS AYRES, Aug. 31.—The present aspect of political affairs in this province is not very flattering. The time which has elapsed since the suspension of the elections, has not in any degree lessened the excitement in the public mind; on the contrary, we think it has increased; indeed, so much, that during the week, the garrison of this city has "slept on their arms," and the odious sounds of "quien vive" are vociferated by the sentinels, who hail every passenger after a certain hour of the night. We know not the cause of these precautions, nor have we heard of any disturbance, much less of any threatening movement.

FALKLAND ISLANDS.—I would seem from the fol-

lowing document, which has appeared in the journals of this city; that the matter is not likely to be soon set at rest.

BOLIVIAN GOVERNMENT.—FOREIGN DEPT.

Government Palace in Chuquiza, 19th June, 1833.

"Sir.—The undersigned Minister of Foreign Affairs of the Bolivian Republic, has laid before his government the esteemed communication of the Minister of Foreign Affairs of Buenos Ayres, relative to the occurrence on the 2d of January last, on the Island of la Soledad, one of the Falkland Islands. This disagreeable event has renewed in the Government of Bolivia, the sentiments of regret which it had before experienced, on observing that mistaken interests have frustrated the grand project of the Congress of Panama. It would indeed have given to the sections of America, all the respectability necessary to prevent European nations from committing aggressions proscribed by international law, and to repel them with vigor in case they should proceed to violent measures. The occupation of the Falkland Islands, without previous reclamation, without any just title, without any other support than the abuse of power, has been senebly felt by the Government of Bolivia, which, respecting even to the extreme, the rights of every nation, would wish that all of them should discard, *de facto*, measures so contrary to reason, and to the enlightenment of the age. As a manifest violation of the law of nations, the outrage committed on the Argentine Republic is not only to be considered, but likewise the disregard of the other American sections which it involves. In more plain terms, the conduct of the British Cabinet with respect to the Falkland Islands, is not only prejudicial to the Government which has been despoiled of their possessions, but offensive and extremely injurious to all the American Republics; and it is, in the opinion of the Government of Bolivia, an affair highly continental. Under this view, it will with pleasure not only enter into and aid in whatever may lead to the reparation of so grievous an offence—but likewise sincerely desires that it may be accounted among the first to reclaim and obtain, by those measures which may be deemed most convenient, indemnity for the injuries sustained, and the redress which so much interests American sovereignty and dignity.

"Such, Sir Minister, are the sentiments of the Government of the undersigned, and of the Bolivian Nation identified with those of every true American heart.—The Government of Buenos Ayres may always reckon upon them, when it has to sustain, and to cause to be respected the political rights of the sister Republics, which are essentially annexed to their Sovereignty and independence.

MARIANO ENRIQUE CALVO.

To H. E. the Minister of Foreign Affairs of the Government of Buenos Ayres."

MONTEVIDEO.—A communication, dated Head Quarters, *El Yi*, 15th inst, from the President of the Oriental Republic of the Uruguay, (Fructuoso, Rivera,) to the Minister of War at Montevideo, states that the tranquility of the Republic being completely established, he had given orders to disband his army, except a small portion of it for the service of the frontiers.

Buenos Ayres Prices.—Ox hides, best, \$31a32 per pesada; do. country, 29a30 do.; do. weighing 23 to 24lbs. \$26a28, do. salted, \$24a26 do.; do. horse, \$10a14 ea.; Nutra skins, \$65a70 per dozen; Chinchilla, \$33a39 do.; Wool, (common) \$9a11 do. per arroba; Hair, (long) \$30a32 do.; Hair, (mixed) \$35a900 per thousand; Flour, (N. A.) \$80a82 per barrel; Salt, on (board) \$16a18 per fanega.

[From the Commercial Advertiser.]

FROM CARTHAGENA.—By the arrival of the British packet *Lyra*, at Kingston, Jam., from Carthage, which place she left on the 8th of October, information is received that Rear Admiral Dupontel, Governor of Martinique, had repaired to Carthage with several French vessels of war, and demanded reparation for the insult offered some time ago to M. Barrot, the Representative of the French court at that place.—The demand was accompanied by a threat of using force in case of refusal. The Governor, Colonel Vesga, stated in reply, that as he was without an armed force, the commander of the French ships could, if he pleased, carry his resolution into effect; but that if he did make war upon a defenceless people, he would be held responsible for the result. The Governor assured the Admiral that he had not the authority to make the reparation demanded—but that it must rest with the supreme authorities. Further correspondence between the parties ensued, which ended in a declaration by the French Admiral, that he would blockade the port, if, at sunset on the 17th, full satisfaction was not awarded.

The *Serpent*, a British vessel of war, had been despatched from Kingston, to protect the persons and property of British subjects at Carthage.

The Kingston Chronicle of the 8th, has the following remarks:—

The whole property of the island is at stake; and one false throw of the Legislature may annihilate it forever. The chances are now in our favor, if we play our game fairly; but if we allow our attention to be drawn aside, or distracted by the excitation of radicals, we shall infallibly lose the self-possession necessary to ensure the success attendant upon calm and cautious dexterity. All must be impressed with the necessity of acting with the most prompt and temperate decision to avert the dreadful consequences of external legislation; and if the present moment be not properly employed to secure our future welfare, the opportunity may be lost forever. An honest, firm and straightforward policy is what we would recommend, and the adoption of a measure likely to reflect credit on the loyalty and generosity of the Jamaica Legislature, as well as to render nugatory the Parliamentary Bill viz: the passing a bill agreeing in principle with that passed by the Imperial Legislature, but regulating the details to suit the character of our Colonial population, and at the same time obviating the expensive machinery of Commissioners. In short, agreeing to shorten or abolish the term of apprenticeship, provided full, fair and unencumbered compensation be immediately secured.

SUMMARY.

[From the National Gazette.]

The letter of E. Champion Jr., to the Editor of the Hartford Times, which appeared in the National Gazette of the 24th inst., being calculated to do injury, by drawing off the attention of the public and engineers from what is generally admitted by practical men to be the cause of the explosion of steam boilers, I have deemed it a duty to endeavor to bring them back to the true source of the evil, namely, the want of water in the boilers.

It is not to be wondered at, that after so terrible a concussion a part of a bulk head should have been found resting on the lever of the safety valve; and even if it had been there before, he has not shown that there was then steam enough to burst a good boiler, which undoubtedly those of the New England must have been, being more than a quarter of an inch thick, and nearly new. It appears, too, that there were two mercurial gauges, yet we do not learn that the quicksilver was blown out, which would have been the case before the steam would have burst the boilers. The rapid formation of steam at Essex proves a scarcity of water; and their simultaneous explosion goes far to prove an instantaneously created, irresistible power; but the circumstance of the accident occurring immediately on the starting of the engine, is conclusive to my mind that the jet of water into highly heated boilers, was the only cause of the lamentable catastrophe.

I have seen a small square boiler, so strongly secured by wrought iron stays that I supposed it capable of bearing a pressure of 500 pound to the square inch, so strained in consequence of an ignorant bystander turning the feed cock for one instant when the boiler was highly heated and quite dry, as to break one or more of the stays, and bend up the top like the lid of a trunk, notwithstanding the safety valve and two additional holes made by the melting of their pipes. Had there been a little more water, it is probable an explosion would have ensued.

When such accidents happen with condensing engines, it seems impossible in any other way to solve the mystery; for they are not capable of working with more than 20 lbs. to the square inch, as they cannot condense more than that, even when they shut off the steam at half the stroke of the piston. Now, little danger can be apprehended from a pressure of 20lbs. in a good boiler, seeing that 100 to 150 is very common with high pressure engines; and the iron of both is nearly the same, although not always the construction.

How, then, can the recurrence of these dreadful explosions be prevented? Not by placing a safety valve under the lock and key of a government officer: this would not remedy the evil, for it would not ensure a supply of water to the boilers. It can only be done by applying more checks and more attention on the part of the captain and engineer. This most important part of the operation of working an engine,—feeding the boilers,—is too frequently entrusted to a very common personage, the fireman—a

person not likely to be very highly impressed with the great responsibility of his station. The gauge cocks are in his room, and too rarely opened by any body else: May not such a one open the cocks mechanically, and not be able one minute afterwards to say whether steam or water was given out? May he not, especially at night, become drowsy and negligent? Let then "sleeping Duty be roused at her post."

The force pump is as complicated as any part of the steam engine, very liable to get out of order, and may not do its office when it is supposed to be doing it. Let then each engine be provided with two force pumps, which shall be used day about to insure their good condition; let gauge cocks, in addition to those of the firemen, be placed within the reach of the engineer; and discourage the racing of steamboats, because, as the feeding of the boilers destroys steam, if either has a difficulty in keeping up a supply, there would be a temptation to withhold the water until it might be dangerous to renew it. It is possible that, owing to an obstruction or defect in the pipe leading to the force pumps, the feeding may not go on. Let the difficulty arise from what it may, there should be no hesitation, after the water gets below the ken of the engineer, which is the case as soon as it is below the lowest gauge cock, to cause the fire under the boilers to be put out, until the remedy is applied, and the boilers replenished by the *hand pump*. Much better would it be to detain the passengers one hour than to injure an individual,—better to detain them a month than to explode a boiler in the midst of them.

L.

Volcanic ashes, when carried into the highest regions of the atmosphere, are usually wafted to the eastward. Upon an eruption of Mount Vesuvius in 1631, a shower of ashes fell upon the coast of continental Greece, and also at one hundred leagues distance towards the coast of Syria. On the eruption at St. Vincent in 1812, ashes were deposited at Barbadoes, sixty or seventy miles eastward, and also on the decks of vessels one hundred miles still farther east, while the trade wind at the surface was blowing in its usual direction. In the same year ashes fell upon the deck of a British packet bound to Brazil, when distant nearly one thousand miles from the nearest land.—[Silliman's Journal.]

Letters have been received, by the owners of this port, of the following ships at Fayal.

Aug. 26th Gov. Clinton—no oil, all well.

Sept. 7. Arabella, no oil, had landed 3 colored men who were sick.

6th. Daniel Webster, no oil, all well.

17th. Franklin, 160 bbls sperm oil, all well.—[Sag Harbor Corrector.]

INTERMENTS AT NEW ORLEANS.—Catholic.—Oct. 12, 24; 13, 10; 14, 14; 15, 13; 16, 15; 17, 14; 18, 13; 19, 13; 20, 11; 21, 7.

Protestant.—Oct. 12, 6; 13, 2; 14, 7; 15, 13; 16, 13; 17, 5; 18, 7; 19, 5; 20, 7; 21, 7.

The loss by the fire at Lee, Mass. on Saturday evening, which destroyed one of the paper mills of W. W. & C. Laffin, was about \$12,000. Insurance \$8000. Only one of the mills was burnt; the other is uninjured. From that which was destroyed, a part of the contents was saved.

We may safely congratulate our readers on the favorable termination to the nation, of our struggles for sovereignty with the State of Alabama, in consequence of that State having extended its jurisdiction over that part of the Cherokee territory lying within its limits. It is we believe, generally known that the Cherokee Government within these limits had been superseded by that of Alabama, and the vacant lands settled upon by the whites. At a Circuit Court of September term, for the county of St. Clair, his honor Judge Adair, presiding, came up for trial, a *Cherokee Indian*, indicted for the murder of an Indian in the Cherokee territory, in Alabama. The Counsel for the Nation filed a plea to the jurisdiction of Alabama, as repugnant to the treaties, &c., of the United States. Judge Adair remarked, that he was sworn to support the Constitution and Treaties of the United States, and would be strictly governed by them. In an elaborate opinion, as we are informed, Judge Adair has declared the laws of Alabama over the Cherokees, null and void, and repugnant to the treaties and laws of the United States. We shall publish the opinion as soon as we can obtain a copy.—[Cherokee Phoenix.]

Mr. J. Fennimore Cooper and his family have arrived in the *Samson*. He will be warmly welcomed to his native home.

We are requested to state, that the hour of starting for Philadelphia has been changed from 6 to 8 o'clock, and the steamboat *Independence*, of the Railroad Line, will leave tomorrow (Wednesday) morning at the above hour, the 10 o'clock line having been discontinued for the season.

[From the *Baltimore American*.]

The Legislature of Tennessee, and the Union Bank of Tennessee, have got into a controversy which threatens to be an angry and protracted one. The circumstances are curious. As far as we can make them out from publications in the Nashville papers, particularly the report of the Committee on Banks, they are these.

The charter of the Union Bank was granted in 1832. For the charter the Bank agreed to pay, by the terms of the act, a certain bonus, and a certain interest on the deposits of public money. The State subscribed for \$500,000 of the stock, for which bonds were issued to that amount, and the seventh section of the charter of incorporation appropriated the proceeds of these several sums in the following way:

"Be it enacted, That the profits which may arise from the stock owned by the State in the Union Bank of the State of Tennessee, after the bonds of the State shall have been paid, and also the bonus agreed to be paid by the Bank of the State for the privileges conferred by this charter, and also the interest which may from time to time accrue, upon the deposits of public money, by the treasurers of the State, shall be and they are hereby appropriated to the use of Common Schools in this State."

On this clause, the President and Directors of the Bank have set up a most extraordinary claim. They refuse to pay the bonus, the interest upon deposits or the dividends on the stock into the State Treasury, and insist that this clause makes them trustees for a sinking fund to pay the State debt contracted by those bonds, to the exclusion of the State itself! The State bonds are not payable finally for thirty years, and the Bank demands to have the use of all the public money, the dividends on all the public stock, and the debt which it owes the State, to accumulate, as they allege, to provide for the security of the holders of State scrip, in case the Legislature might fail to raise the necessary funds. They, therefore, tell the Legislature that they feel it their duty to "resist" the withdrawal of these funds from the Bank.

As might be expected, the Legislature is rather restive under these imputations upon the honor and credit of the State, and efforts to supersede the functions of the Treasury by a corporation. The report of the Committee uses freely such phrases as 'officious interference,' 'arrogant dictation,' 'rapacity,' 'fraud,' &c. and recommends a bill,—we have not seen it,—to bring the matter before the judicial tribunals.

The *Indian Question* is before the Legislature of Tennessee. The Cherokee lands in that State form a very considerable tract of country, over which the laws of the State have not yet been extended. At the present session, a bill has been reported for giving the State Courts "cognizance of crimes and misdemeanors committed, and of all contracts made in the said territory."

The bill expressly reserves to the Indians the unmolested enjoyment of their property, real and personal, their customs and usages, and exempts them from taxation by the State, except where admitted according to law to all the privileges of citizens.

It met with considerable opposition upon the ground that the Cherokees were, in accordance with existing treaties under the constitution, a quasi independent nation, and could not rightfully be subjected to the jurisdiction of the State. After a long discussion, it was finally passed by a vote of 24 to 15, and sent to the Senate, which body has not yet acted upon it. [Baltimore American.]

The *Montreal Daily Advertiser*, of the 29th ult. says—"A shock of an earthquake was felt at Metis, on Saturday, the 12th inst."

NAVAL.—Com. Wadsworth, appointed to the command of the United States squadron in the Pacific, has hoisted his broad pendant on board the United States ship *Vincennes*, lying in this harbor. We understand the *V.* will sail in a few days. [Norfolk Beacon.]

MOBILE, Oct. 21.—The new mail boat *Watchman*,

Capt. Godney, arrived at this port yesterday. She is a fine specimen of naval architecture, and from what we have seen and heard, we make no doubt she is well calculated for the route for which she is destined. The time occupied in running from Cape Henry to Mobile Point, was only 9 days and seven hours, during which time, in consequence of head winds, she used her sails but eight hours. She will remain here about a week, to complete the repairs rendered necessary by the accident with the brig *Nahant*, when she will take her place on the line. Capt. Godney pronounces her a first rate sea-boat.

Mr. CLAY.—We learn that Mr. Clay was to leave Boston on his return South yesterday—crossing over the country via Worcester, Northampton, Pittsfield, &c. to Troy and Albany—and thence descending the river to this city. The citizens of Troy and Albany, without distinction of party, have extended an invitation to the Western Statesman, and we are glad that he has accepted it.—[Com.]

[From the *Newbern N. C., Spectator*.]

We observe with great satisfaction the present prosperous and improving state of our town. Every commodity brought to market finds a ready and fair sale. The citizens of the adjacent country are satisfied with the prices, and believe that their labour is adequately remunerated. There is not a house in town which is not either occupied or engaged, and new buildings are gradually appearing in every direction. The number of merchants, also, has increased very considerably. We hope that these signs of prosperity may be as substantial as they are cheering, and that they may be followed by an increased diffusion of information, (i. e. the *Sentinel*) and a generous encouragement of literature.

The President has officially recognized *Adel Charles Lacathon de la Forest*, as Consul General of France for the United States.

The United States sloop of war *Warren*, Master Commandant Cooper, arrived at Philadelphia on Wednesday, and anchored off the Navy Yard. A national salute was fired by the *Warren*, and returned from the Navy Yard. Officers and crew all well.

[From the *National Intelligencer* of Wednesday.]

We understand that among the official visitors now in this city, are the members of the Army Medical Board of Examination. The Board, after a tour of inspection along the Northwestern, Western, and Southwestern stations, of nine thousand miles travel, and after sitting as a Board of Examination at New Orleans, St. Louis, and at New York, have been ordered to the seat of government, to confer with the Secretary of War and the Surgeon General, on the important duties which have occupied them for the last eight months. The Board consists of Surgeons Lawson and Mower, and Assistant Surgeon Smith. While the operations of this Board have had an influence on the Medical department of the Army, primarily conducive to the safety, health and comfort of the brave soldier and the gallant officer, it is but an act of justice to their humanity and professional skill, to state, that in long course of their journey they travelled with the pestilence in the West, and most assiduously devoted their able services to the relief of their fellow citizens.

We consider the establishment of the Army Board of Medical Examination as highly creditable to the judgment and energy of Secretary Cass, as its perpetuation is certainly to conduce to the health and safety of the army, and to elevate the character of our Military Medical Department.

ANATOMY OF THE HORSE'S FOOT.—The horse, a native of extensive plains and steppes, is perfect in his structure, as adapted to these, his natural pasture grounds. When brought, however, into subjection, and running on our hard roads, his feet suffer from concussion. The value of the horse, so often impaired by lameness of the foot, has made that part an object of great interest; and I have it from an excellent professor of veterinary surgery to say, that he has never demonstrated the anatomy of the horse's foot without finding something new to admire. The weight and power of the animal require that he should have a foot in which strength and elasticity are combined. The elasticity is essentially necessary to prevent concussion in striking the ground; and it is attained here, through the united effect of the oblique position of the bones of the leg and foot—the yielding nature of the suspending ligament, and the expansibility of the crust or hoof. So much depends on the position of the pastern bones and coffin bone, that, judging by the length of these

and their obliquity, it is impossible to say whether a horse goes easily, without mounting it. When the hoof is raised, it is smaller in its diameter, and the sole is concave; but when it bears on the ground it expands, the sole descends so as to become flatter; and this expansion of the hoof laterally is necessary to the play of the whole structure of the foot. Hence it happens that if the shoe be nailed in such a manner as to prevent the hoof expanding, the whole interior contrivance for mobility and elasticity is lost. The foot in trotting, comes down solid, it consequently suffers concussion; and from the injury, it becomes inflamed and hot. From this inflammation is generated a variety of diseases, which at length destroy all the beautiful provision of the horse's foot for free and elastic motion. The subject is of such general interest, that I may venture on a little more detail. The elastic or suspending ligament spoken of above passes down from the back of the cannon bone, along all the bones to the lowest, the coffinbone; it yields and allows, these bones to bend. Behind the ligament the great tendons run, and the most prolonged of these, that of the perforans muscle, is principally inserted into the coffin bone, having at the same time other attachments. Under the bones and tendon, at the sole of the foot, there is a soft elastic cushion; this cushion rests on the proper horny frog, that prominence of a triangular shape which is seen in the hollow of the sole. The soft elastic matter being pressed down, shifts a little backwards, so that it expands the heels, at the same time that it bares on the frog, and presses out the lateral part of the crust. We perceive that there is a necessity for the bottom of the hoof being hollow or concave—first to prevent the delicate apparatus of the foot from being bruised, and, secondly, that elasticity may be obtained by its descent. We see that the expansion of the hoof and the descent of the sole are necessary to the play of the internal apparatus of the foot. That there is a relation between the internal structure and the covering, whether it be the nail, or crust, or hoof, we can hardly doubt: and an unexpected proof of this offers itself in the horse. There are some very rare instances of a horse having digital extremities. According to Suetonius, there was such an animal in the stables of Cæsar; another was in the possession of Leo X.; and Geoffrey St. Hilaire, in addition to those, says, that he has seen a horse with three toes on the fore-foot, and four on the hind-foot.* These instances of deviation in the natural structure of the bones were accompanied with a corresponding change in the coverings—the toes had nails, not hoofs. By these examples, it is made to appear still more distinctly, that there is a relation between the internal configuration of the toes and their coverings—that when there are five toes complete in their bones, they are provided with perfect nails—when two toes represent the whole, as in the cleft foot of the ruminant, there are appropriate horny coverings—and that when the bones are joined to form the pastern bones and coffin bone, there is a hoof or crust, as in the horse, couagga, zebra, and ass.—[Bell's Bridgewater Treatise.]

* Such a horse was, not long since, exhibited in town, and at Newmarket.

MAXIMS AND REFLECTIONS FROM GOETHE.

Modern poets pour a great deal of water in their ink.

The greatest difficulties are found where they are least expected.

In the works of man, as in those of nature, their purpose and design are the proper objects of our attention.

The greatest good that we derive from history is that it awakes enthusiasm.

Literature is a fragment of a fragment. Of all that ever happened, or has been said, but a fraction has been written; and of this latter but little is extant.

Shakspeare is dangerous reading to budding talent,—he compels it to reproduce him while it fancies it is producing itself.

Wisdom exists only in truth.

The smallest hair casts its shadow.

There are not always frogs where there is water, but where we hear them croak we may be sure the latter is not far off.

Many knock at random on the wall with the hammer, and fancy they hit the nail on the head every time.

Historical writing is a way of getting rid of the past.

What we do not understand we do not possess.

Foresight is simple, retrospection manifold.

One who feels not love must learn to flatter, or he will never succeed.

The world is a cracked bell; it rattles, but does not ring.

There are men who never go wrong, because they never entertain any sensible project.

Time is itself an element.

Let us know the world as we may, it has always a day and night side.

At all times it is individuals and not the age which have influenced knowledge. It was his age which poisoned Socrates, his age which condemned Huss to the stake. Ages have always been alike.

What government is the best?—that which teaches us to govern ourselves.

Truth is like God: it does not show itself directly; we must seek it in its manifestations.

It would not be worth while to live to seventy, if all the wisdom of the world is foolishness before God.

APHORISMS ON NATURAL SCIENCE.

The ignorant propose questions which the learned have answered a thousand years ago.

Nothing is more prejudicial to a new truth than an old error.

Man must persist in the belief that the incomprehensible is comprehensible, otherwise he would inquire into nothing.

Hypotheses are lullabies with which teachers hush their pupils asleep.

AN INTERESTING AND USEFUL MAP.

A friend of ours has now in a state of forwardness, a Map upon which will be delineated nearly all the Railroads now chartered in the U. States. It is designed to show the present contemplated connexion of the different lines, as well as where others may hereafter be constructed to connect with them. It will be completed in a few weeks, and may be had either in sheets, or put up in morocco for pocket maps, in any quantity, by applying to the subscriber.

D. K. MINOR, 35 Wall street.

GRACIE, PRIME & CO. having this day taken into co-partnership JOHN CLARKSON JAY, will continue their business under the same firm.—New-York, 1st October, 1833.

TO STEAMBOAT COMPANIES.

PROFESSOR RAFINESQUE, of Philadelphia, offers his services to render steamboats incombustible, and not liable to sink, even by the bursting of boilers, or striking against snags, sawyers and rocks. This will save many boats, much property, and the lives of hundreds every year. Those who neglect this easy improvement, deserve to be neglected and deserted by the public as unmindful of safety. Apply, post paid.

SI R J M & F

RAILWAY IRON.

Ninety-five tons of 1 inch by 1 inch.	Flat Bars in lengths of 14 to 16 feet counter sunk holes, ends cut at an angle of 45 degrees with splicing plates, nails to suit.
200 do. 1 1/2 do. do.	
40 do. 1 1/2 do. do.	
900 do. 2 do. do.	
800 do. 2 1/2 do. do.	

250 do. of Edge Rails of 36 lbs. per yard, with the requisite chairs, keys and pins.

The above will be sold free of duty, to State Governments, and Incorporated Governments, and the Drawback taken in part payment.

A. & G. RALSTON.

9 South Front street, Philadelphia.

Models and samples of all the different kinds of Rails, Chairs, Pine, Wedges, Spikes, and Splicing Plates, in use, both in this country and Great Britain, will be exhibited to those disposed to examine them.

NOTICE TO MANUFACTURERS.

SIMON FAIRMAN, of the village of Lansingburgh, in the county of Rensselaer, and state of New-York, has invented and put in operation a Machine for making Wrought Nails with square points. This machine will make about sixty 60 nails, and about forty 100 nails in a minute, and in the same proportion larger sizes, even to spikes for ships. The nail is hammered and comes from the machine completely heated to redness, and its capacity for being clenched is good and sure. One horse power is sufficient to drive one machine, and may easily be applied where such power for driving machinery is in operation. Said Fairman will make, vend and warrant machines as above, to any persons who may apply for them as soon as they may be made, and on the most reasonable terms. He also desires to sell one half of his patent right for the use of said machines throughout the United States. Any person desiring further information, or to purchase, will please to call at the machine shop of Mr. John Humphrey, in the village of Lansingburgh.—August 15, 1833.

AS9d RM&F

TO RAILROAD COMPANIES.

PROFESSOR RAFINESQUE, of Philadelphia, will undertake to build CARS that will carry along their own railway, and may be used on level M^d roads. They will save ten millions of money to be wasted on 1000 miles of iron railroads to be laid in the United States within a few years, and dispense with tracks and double tracks. These Cars may be drawn by horses or steam. He claims to have discovered them ever since 1823, by his caveat filed in the Patent Office. Apply, post paid.

SI R J M & F

G. LANSING, Engraver on Wood,
35 WALL STREET.

All kinds of Machinery correctly drawn, and neatly engraved.

THE ADDRESS OF J. P. KENNEDY, Esq., of Baltimore, delivered before the Members of the American Institute in this city, together with a full account of the FAIR, held at Masonic Hall, for 1833, and for which a copy-right has been secured, will be published in pamphlet form, at the office of the MECHANICS' MAGAZINE. It will be ready for delivery on the 12th inst. when it may be had by the single number, dozen, or hundred.

nl

FOR SALE.

ATLANTIC JOURNAL AND FRIEND OF KNOWLEDGE—A Quarterly Journal, by Professor Rafinesque, of Philadelphia, begun in the spring of 1833, with wood cuts, &c. dedicate to Historical and Natural Sciences, Botany, Agriculture, &c. at one dollar per annum.

MEDICAL FLORA OF THE UNITED STATES, in 2 vols. with 100 plates, containing also the economical properties of 100 genera of American plants. \$3.

MANUAL OF AMERICAN VINES, and Art of Making Wines, with 8 figures. 25 cents.

FISHES AND SHELLS OF THE RIVER OHIO. 1 dollar.

AMERICAN FLORIST, with 36 figures—price 36 cts.

* * Orders for these works, or any other of Professor Rafinesque's, received at this office.

AS9d J M & F

INCOMBUSTIBLE ARCHITECTURE.

INCOMBUSTIBLE dwelling-houses and buildings of all kinds devised or built in New-York, or any part of the United States, as cheap as any other combustible buildings, actual buildings and houses rendered incombustible at a small additional expense.

SHIPS of all sorts, and Steamboats, rendered incombustible, and not liable to sink, at a small expense.

For sale, 10,000 lbs. of ANTIGNIS, or Incombustible Varnish, at one dollar per lb.

Apply to C. S. RAFINESQUE, Professor of Hist. and Nat. Sciences, Chemist, Architect, &c. in Philadelphia, No. 59 North 5th street. A pamphlet given gratis.

References in New-York.—Mr. Minor, Editor of the Mechanics' Magazine; Messrs. Rushon & Aspinwall, Druggists. Editors in the city or country, copying this advertisement, will receive a commission on any contract procured by their means.

SI R J M & F

TOWNSEND & DUFFEE, of Palmyra, Manufacturers of Railroad Rope, having removed their establishment to Hudson, under the name of Duffee, May & Co. offer to supply Rope of any required length (without splice) for inclined planes of Railroads at the shortest notice, and deliver them in any of the principal cities in the United States. As to the quality of Rope, the public are referred to J. B. Jervis, Eng. M. & H. R. Co., Albany; or James Archibald, Engineer Hudson and Delaware Canal and Railroad Company, Carbondale, Luzerne county, Pennsylvania.

Hudson, Columbia county, New-York, {
January 29, 1833.

F3 d

SURVEYORS' INSTRUMENTS.

Compasses of various sizes and of superior quality, warranted.

Leveling Instruments, large and small sizes, with high magnifying powers with glass made by Troughton, together with a large assortment of Engineering Instruments, manufactured and sold by

E. & G. W. BLUNT, 154 Water street, corner of Maidenlane.

ENGINEERING AND SURVEYING INSTRUMENTS.

The subscriber manufactures all kinds of Instruments in his profession, warranted equal, if not superior, in principles of construction and workmanship to any imported or manufactured in the United States; several of which are entirely new: among which are an Improved Compass, with a Telescope attached, by which angles can be taken with or without the use of the needle, with perfect accuracy; also, a Railroad Goniometer, with two Telescopes; and a Levelling Instrument, with a Goniometer attached, particularly adapted to Railroad purposes.

WM. J. YOUNG,

Mathematical Instrument Maker, No. 9 Dock street, Philadelphia.

The following recommendations are respectfully submitted to Engineers, Surveyors, and others interested.

Baltimore, 1832.

In reply to thy inquiries respecting the instruments manufactured by thee, new in use on the Baltimore and Ohio Railroad, I cheerfully furnish thee with the following information. The whole number of Levels now in possession of the department of construction of thy make is seven. The whole number of the "Improved Compass" is eight. These are all exclusive of the number in the service of the Engineer and Graduation Department.

Both Levels and Compasses are in good repair. They have in fact needed but little repairs, except from accidents to which all instruments of the kind are liable.

I have found that thy patterns for the levels and compasses have been preferred by my assistants generally, to any others in use, and the Improved Compass is superior to any other description of Goniometer that we have yet tried in laying the rails on this Road.

This instrument, more recently improved with a reversing telescope, in place of the vane sights, leaves the engineer scarcely any thing to desire in the formation or convenience of the Compass. It is indeed the most completely adapted to lateral angles of any simple and cheap instrument that I have yet seen, and I cannot but believe it will be preferred to all others now in use for laying of rails—and in fact, when known, I think it will be as highly appreciated for common surveying.

Respectfully thy friend,

JAMES F. STABLER, Superintendent of Construction

of Baltimore and Ohio Railroad.

Philadelphia, February, 1833.

Having for the last two years made constant use of Mr. Young's "Patent Improved Compass," I can safely say I believe it to be much superior to any other instrument of the kind, now in use, and as such most cheerfully recommend it to Engineers and Surveyors.

E. H. GILL, Civil Engineer.

Germanstown, February, 1833.

For a year past I have used instruments made by Mr. W. J. Young, of Philadelphia, in which he has combined the properties of a Theodolite with the common Level.

I consider these instruments admirably calculated for laying out Railroads, and can recommend them to the notice of Engineers as preferable to any others for that purpose.

HENRY B. CAMPBELL, Eng. Philad.

Cincinnati, and Norristown Railroad

mlly

STEPHENSON.

Builder of a superior style of Passenger Cars for Railroads,

No. 264 Elizabeth street, near Bloeker street,

New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlem Railroad, now in operation.

J35 d

NOVELTY WORKS.

Near Dry Dock, New-York.

THOMAS B. STILLMAN, Manufacturer of Steam Engines, Boilers, Railroad and Mill Work, Lathes, Presses, and other Machinery. Also, Dr. Nott's Patent Tubular Boilers, which are warranted, for safety and economy, to be superior to any thing of the kind heretofore used. The fullest assurance is given that work shall be done well, and on reasonable terms. A share of public patronage is respectfully solicited.

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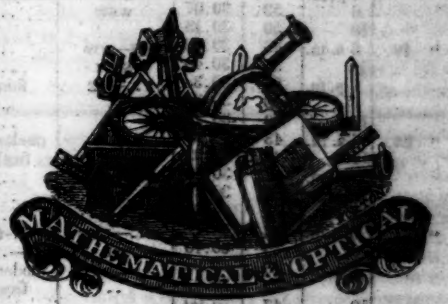
RAILROAD CAR WHEELS AND BOXES,

AND OTHER RAILROAD CASTINGS.

Also, AXLES furnished and fitted to wheels complete, at the Jefferson Cotton and Wool Machine Factory and Foundry, Paterson, N. J. All orders addressed to the subscribers at Paterson, or 60 Wall street, New-York, will be promptly attended to. Also, CAR SPRINGS.

Also, Flange Tires turned complete.

J8 ROGERS, KETCHUM & GROSVENOR.



INSTRUMENTS

SURVEYING AND NAUTICAL INSTRUMENT MANUFACTORY.

EWING & HEARTT, at the sign of the Quadrant, No. 53 South street, one door north of the Union Hotel, Baltimore, beg leave to inform their friends and the public, especially Engineers, that they continue to manufacture to order and keep for sale every description of Instruments in the above branches, which they can furnish at the shortest notice, and on fair terms. Instruments repaired with care and promptitude.

For proof of the high estimation on which their Surveying Instruments are held, they respectfully beg leave to tender to the public perusal, the following certificates from gentlemen of distinguished scientific attainments.

To Ewing & Heartt.—Agreeably to your request made some months since, I now offer you my opinion of the Instruments made at your establishment, for the Baltimore and Ohio Railroad Company. This opinion would have been given at a much earlier period, but was intentionally delayed, in order to afford a longer time for the trial of the Instruments, so that I could speak with the greater confidence of their merits, if such they should be found to possess.

It is with much pleasure I can now state that notwithstanding the Instruments in the service procured from our northern cities are considered good, I have decided preference for those manufactured by you. Of the whole number manufactured for the Department of Construction, to wit: five Levels, and five of the Compasses, not one has required any repairs within the last twelve months, except from the occasional imperfection of a screw, or from accidents, to which all Instruments are liable. They possess a firmness and stability, and at the same time a neatness and beauty of execution, which reflect much credit on the artists engaged in their construction.

I can with confidence recommend them as being worthy the notice of Companies engaged in Internal Improvements, who may require Instruments of superior workmanship.

JAMES P. STABLER,

Superintendent of Construction of the Baltimore and Ohio Railroad.

I have examined with care several Engineers' Instruments of your Manufacture, particularly Spirit Levels, and Surveyors' Compasses; and take pleasure in expressing my opinion of the excellence of the workmanship. The parts of the levels appeared well proportioned to secure facility in use, and accuracy and permanency in adjustments.

These instruments seemed to me to possess all the modern improvement of construction, of which so many have been made within these few years; and I have no doubt but they will give every satisfaction when used in the field.

WILLIAM HOWARD, U. S. Civil Engineer.

Baltimore, May 1st, 1833.

To Messrs Ewing and Heartt.—As you have asked me to give my opinion of the merits of those instruments of your manufacture which I have either used or examined, I cheerfully state that as far as my opportunities of my becoming acquainted with their qualities have gone, I have great reason to think well of the skill displayed in their construction. The neatness of their workmanship has been the subject of frequent remark by myself, and of the accuracy of their performance I have received satisfactory assurance from others, whose opinion I respect, and who have had them for a considerable time in use. The efforts you have made since your establishment in this city, to relieve us of the necessity of sending elsewhere for what we may want in our line, deserve the unqualified approbation and our warm encouragement. Wishing you all the success which your enterprise so well merits, I remain, yours, &c.

H. H. LATROBE,

Civil Engineer in the service of the Baltimore and Ohio Railroad Company.

A number of other letters are in our possession and might be introduced, but are too lengthy. We should be happy to submit them upon application, to any persons desirous of perusing the same.

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METEOROLOGICAL RECORD, KEPT IN THE CITY OF NEW-YORK,

From the 15th to the 25th day of October 1833, inclusive.

[Communicated for the American Railroad Journal and Advocate of Internal Improvements.]

Date.	Hours.	Thermometer.	Barometer.	Winds.	Strength of Wind.	Clouds from what direction.	Weather.
Octob. 15..	6 a. m.	52	30.17	WSW	faint	w by s	cloudy
	10	56	30.19	variable	light	..	—fair
	2 p. m.	62	30.10	SSE	light	{ w by s }	fair—cloudy
" 16..	6	61	30.03	..	..	w by s	cloudy
	10	61	30.04	..	..	..	..
	2 p. m.	64	29.96	S—SW	moderate	sw by w	..
" 17..	6 a. m.	67	29.98	SSW	..	SW	..
	10	70	29.91	S	..	..	..
	2 p. m.	68	29.89	..	light	..	..
" 18..	6 a. m.	66	29.90	..	..	..	fair
	10	64	29.82	..	..	..	cloudy
	2 p. m.	65	29.80	SSE	..	..	—storm
" 19..	6 a. m.	69	29.77	ESE	—fresh	..	rainy
	10	67	29.70	SSE	moderate	{ SSW }	—fair
	2 p. m.	67	29.60	..	strong	..	fair—light scuds from SSE
" 20..	6 a. m.	53	29.85	..	..	..	..
	10	52	29.90	WSW	..	SSW	..
	2 p. m.	57	29.95	SSW	moderate	..	cloudy
" 21..	6 a. m.	53	30.07	WSW	..	..	—fair
	10	50	30.18	..	..	..	..
	2 p. m.	45	30.33	W—NW	..	WSW	..
" 22..	6 a. m.	40	30.40	NNW	..	..	..
	10	53	30.38	..—SE	faint	..	..
	2 p. m.	50	30.38	..	..	..	..
" 23..	6 a. m.	50	30.41	..	..	..	cloudy
	10	43	30.33	NE	moderate	ENE rain scuds	rain
	2 p. m.	42	30.35	..	fresh	NE	..
" 24..	6 a. m.	44	30.32	..	..	..	..
	10	43	30.26	..	..	..	..
	2 p. m.	42	30.26	..	..	..	..
" 25..	6 a. m.	44	30.12	..—ENE	mod.—fresh	..	..
	10	45	30.10	NE	..	..	..
	2 p. m.	46	30.05	..	moderate	..	..
" 26..	6 a. m.	47	30.03	..	fresh	..	..
	10	47	30.00	..	..	..	..
	2 p. m.	48	29.83	NNW	moderate	NNW—NW	rainy
" 27..	6 a. m.	48	29.89	NW—NNW	..	WNW	..
	10	49	29.87	W—W by N	..	{ S }	cloudy
	2 p. m.	49	29.89	W by N	..	{ WNW }	..
" 28..	6 a. m.	47	29.94	WSW	..	{ WNW }	fair
	10	47	29.94	WSW	..	SW	..
	2 p. m.	47	29.94	WSW	..	..	..
" 29..	6 a. m.	47	29.94	WSW	..	..	..
	10	47	29.94	WSW	..	..	..
	2 p. m.	47	29.94	WSW	..	..	..
" 30..	6 a. m.	47	29.94	WSW	..	..	..
	10	47	29.94	WSW	..	..	..
	2 p. m.	47	29.94	WSW	..	..	..

METEOROLOGICAL RECORD, KEPT AT AVOYLE FERRY, RED RIVER, LOU.

For the month of September, 1833—(Lat. 31.10 N., Long. 91.59 W. nearly.)

[Communicated for the American Railroad Journal and Advocate of Internal Improvements.]

Date.	Thermometer.			Wind.	Weather, Remarks, &c.
1833.	Morn'g.	Noun.	Night.		
Sept'r 1	72	89	82	NE—light	cloudy—Red River falling
" 2	71	88	81	..	clear
" 3	70	87	82	calm	..
" 4	71	87	78	E	light showers & sunshine—evening calm & cloudy—Red River fell 5 inches
" 5	74	86	77	NE—strong	cloudy—at 3 a. m. commenced raining and continued very heavy to 1 p. m.
" 6	74	86	83	SE—light	clear—flying clouds—evening calm—Red River rising
" 7	73	87	80	calm	.. evening—light showers
" 8	74	86	82	..	..
" 9	72	88	82	..	—Red River risen 22 inches, now falling
" 10	77	88	82	..	cloudy morning—from 10 a. m. wind NE and clear—night cloudy
" 11	75	86	83	..	clear
" 12	73	87	85	..	..
" 13	72	86	80	..	—light shower at 1 p. m.
" 14	75	86	79	SW	.. morning—light showers—calm—cloudy evening
" 15	74	85	83	W	.. flying clouds—evening calm and sultry
" 16	76	86	83	calm	.. light breezes from a
" 17	77	83	80	..	..
" 18	75	86	82	SE	..
" 19	72	85	78	calm	—Red River fell since the 9th, 22 inches
" 20	71	88	82	..	..
" 21	71	74	73	NE	cloudy—night calm and clear
" 22	60	73	68	N	clear
" 23	53	75	70	calm	..
" 24	62	76	73	N	—calm evening
" 25	62	79	77	NW	..
" 26	65	81	78	calm	..
" 27	65	84	79	..	..
" 28	74	87	80	SW—light	cloudy—clear evening
" 29	70	87	80	calm	clear
" 30	72	87	77	S—light	at 4 p. m. thunder shower—heavy showers all night.

* Sept. 5th—severe flaws of wind all day; evening and night heavy showers; at night wind severe from E to SE.

September—Red River fell since the 1st of this month, 1 foot 4 inches; fell previously, 23 feet 10 inches; and is now below high water mark, 24 feet 2 inches.

[From the Albany Argus.]

We have been requested by the Comptroller to publish the following notice:—

Merchandise transported upon the Canal.—Merchants would facilitate the transportation of merchandise upon the canal, if they would weigh each box, cask, package or separate parcel of goods, and mark the weight upon it. The statute requires that "every master of a canal boat, conveying property on a canal, shall exhibit to the several collectors, a just and true account, or bill of lading," containing among other things, "a statement of the weight of all the articles on which toll is charged by the ton."

This weight should be ascertained and marked upon the box or cask, by the merchant who sells the goods. The attention of merchants in the city of New-York is specially directed to this subject of weighing and marking merchandise which is to be transported upon the canals.

Canal boats are now frequently loaded in the city of New York with 30 or 40 tons of merchandise, and when the boat arrives at Albany and a clearance is wanted, the master has not the means of giving such a bill of lading as the law requires, without unloading his boat and weighing each article.

The merchants who sell the goods may remedy this evil by weighing and marking upon each article the weight thereof, and by giving the purchaser or shipper, with his bill of goods, the weight also of each article.

Every person who loads a canal boat, in New York or elsewhere, should bear in mind, that to enable him to get a clearance to navigate the canal, he must be enabled to give, not only a bill of all the articles on board, but also the weight of each article.

Nov. 1, 1833.

MARRIAGES.

Thursday evening, Oct. 31st, by the Rev. Dr. Lyell, EDWARD B. VALENTINE, to Miss ELIZA EMILY, daughter of Elijah Pluckney, Esq. all of this city.

On Wednesday morning, 6th inst., at St. Thomas's Church, by the Rev. Dr. Hawks, J. H. BORROW, M. D., to JANE, daughter of John Beckman, Esq. all of this city.

On the 17th instant, by F. T. Tiffany, Mr. JAMES SWARTWOUT, of Milford, to Miss MARGARET WILCOX, of Middlefield, Otsego co., N. Y.

On the 15th instant, by Rev. Daniel Naah, Mr. AURELIUS TUNNICLIFF, of Warren, Her. co., to Miss NANCY ANN TUNNICLIFF, of Columbia.

On the 20th instant, by Elder H. Robertson, Mr. HARVEY W. KENDAL, to Miss PHOEBE IRONS, all of Hartwick.

In Laurens, on the 20th inst., by S. J. Cook, Esq. Mr. GEORGE MATTERSON to Miss PHILINDA ELDRED.

At Pendleton, S. C., on the 22d inst., by the Rev. Mr. Barnwell, WILLIAM VAN WYCK, of this city, to LYDIA ANN, youngest daughter of Samuel Maverick, Esq. of the former place.

In Philadelphia, on the 5th instant, by the Right Rev. Bishop White, GEORGE TROTT, Jr., of this city, to SARAH, eldest daughter of Thomas McKean, Esq., and grand daughter of the late Governor McKean, of Pennsylvania.

At Coxsackie, on Monday evening last, by the Rev. Mr. Grigg, of Athens, COLUMBUS LANE, of New York, to ELIZABETH, daughter of Barent Houghtaling, Esq., of Coxsackie.

At Port Deposit, on Tuesday Morning, 22d inst. by the Rev. W. Finney, Lieut. JOHN ARCHER, of the U. S. Army, to Miss ANN D. daughter of T. L. Savin, Esq. of Port Deposit.

DEATHS.

On Sunday morning, after a short illness, DANIEL BOARDMAN, Esq., in the 77th year of his age.

Yesterday afternoon, in the 31st year of his age, Mr. JAMES F. JACKSON.

This morning, Oct. 31st, WILLIAM DEWITT, infant son of Dr. C. A. Lee, aged 11 months.

Thursday evening, Oct. 31st, Mrs. MARY BREWSTER, in the 63d year of her age.

On the 28th instant, LYDIA ANN ANTHONY, wife of Captain Caleb Anthony, Jr.

On Saturday evening, of a lingering disease, Mrs. A. WILSON, consort of James Wilson, and daughter of the late R. Hannan, deceased.

On Saturday evening, Wm. W. ELLIS, aged 7 years.

At Schooley's Mountain, N. J., on Thursday afternoon last, LEONORA, twin daughter of C. Bewne.

On 18th Oct., at Pleasant Valley, Dutchess County, JOHN A. WOOD, Esq. formerly Sheriff of that County.

On the 13th October, at Alton, Illinois, BENJAMIN IVES GILMAN, late of this city, in the 68th year of his age.

In Hartwick, on the 23d inst. of consumption, Mr. ORIMEL EDSON, aged 41 years.

At Kinderhook, N. Y. on the 23d ult., ANDREW MELISS, a native of Scotland, and formerly a merchant of this city, in the 47th year of his age.

At Carthage, on the 12th September, last, of the yellow fever, Mr. Abram Kashow, late of this city, in the 24th year of his age.

In the death of this young gentleman, thus cut down in the bloom of manhood, society has sustained no ordinary loss—but to numerous friends whom intimate association had made acquainted with his many amiable qualities, the loss is irreparable. To a heart possessed of every noble attribute which could adorn or dignify our nature, he joined a highly gifted mind, which application to the ample page of Knowledge had richly endowed with intellectual beauties. Affable in manner, manly and generous in action, ardent and sincere in his attachments, he won all hearts; and though now reposing in the dreamless sleep of eternity on a foreign shore, he will not be forgotten. Loved in life, he will be sincerely regretted in death; and the fondest recollections will be cherished of his memory in the minds of those who knew and appreciated his gentleness and worth.—[Communicated.]